

**CONTRACT DOCUMENTS  
AND  
SPECIFICATIONS**

**DIVISION OF WATER QUALITY**

**FOR**

**WEST HICKMAN WWTP FINAL  
CLARIFIERS No. 7 AND No. 8  
STRUCTURAL REPAIRS**

**Bid No. 130-2018**

**Conformed Set**

**PREPARED BY: HAZEN AND SAWYER**

**DIVISION OF WATER QUALITY  
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT**

THIS PAGE LEFT BLANK INTENTIONALLY

**TABLE OF CONTENTS**

**CONTRACT DOCUMENTS**

**WH WWTP FINAL CLARIFIERS NO. 7 & NO. 8 STRUCTURAL REPAIRS**

---

PART I	ADVERTISEMENT FOR BIDS
PART II	INFORMATION FOR BIDDERS
PART III	FORM OF PROPOSAL
PART IV	GENERAL CONDITIONS
PART V	SPECIAL CONDITIONS
PART VI	CONTRACT AGREEMENT
PART VII	PERFORMANCE AND PAYMENT BONDS
PART VIII	ADDENDA
PART IX	TECHNICAL SPECIFICATIONS

01015 - OWNER FURNISHED EQUIPMENT AND SERVICES  
01090 - REFERENCED STANDARDS  
01210 - ALLOWANCES  
01300 - SUBMITTALS SECTION  
01470 - WATERTIGHTNESS TESTING OF CONCRETE STRUCTURES  
01510 - TEMPORARY UTILITIES  
01520 - MAINTENANCE OF UTILITY OPERATIONS DURING  
CONSTRUCTION  
01540 - DEMOLITION AND REMOVAL OF EXISTING STRUCTURES  
AND EQUIPMENT  
01650 - EQUIPMENT TESTING AND PLANT START-UP  
01785 - PROJECT RECORD DOCUMENTS  
02050 - DEMOLITION  
02140 - DEWATERING  
02200 - EARTHWORK  
02207 - AGGREGATE MATERIALS  
02216 - ROCK ANCHORS  
02370 - SWPPP  
02371 - CONSTRUCTION SITE SWPPP  
02372 - EROSION AND SEDIMENTATION CONTROL  
02500 - SURFACE RESTORATION  
02910 - FINAL GRADING AND LANDSCAPING  
03100 - CONCRETE FORMWORK  
03200 - REINFORCING STEEL  
03250 - CONCRETE ACCESSORIES  
03290 - JOINTS IN CONCRETE  
03300 - CAST-IN-PLACE CONCRETE

03350 - CONCRETE FINISHES  
03370 - CONCRETE CURING  
03600 - GROUT  
05010 - METAL MATERIALS  
05035 - GALVANIZING  
05050 - METAL FASTENING  
07900 - JOINT FILLERS, SEALANTS AND CAULKING  
09900 - PAINTING  
11461 - CIRCULAR SECONDARY CLARIFIER EQUIPMENT  
15206 - SLUICE GATES

**APPENDICES**

Appendix A – New Sluice Gates – Shop Drawings  
Appendix B – LFUCG Standard Drawings 2017  
Appendix C – Geotechnical Exploration – West Hickman Clarifiers 7 & 8  
Appendix D – 1999 FMSM Logs of Borings

**PART I**

**ADVERTISEMENT FOR BIDS**

**INDEX**

**WH WWTP FINAL CLARIFIERS NO. 7 & NO. 8 STRUCTURAL REPAIRS**

---

1.	INVITATION .....	AB-2
2.	DESCRIPTION OF WORK.....	AB-2
3.	OBTAINING PLANS, SPECIFICATIONS, AND BID DOCUMENTS.....	AB-2
4.	METHOD OF RECEIVING BIDS .....	AB-3
5.	METHOD OF AWARD.....	AB-3
6.	BID WITHDRAWAL.....	AB-3
7.	BID SECURITY .....	AB-3
8.	SUBMISSION OF BIDS.....	AB-3
9.	RIGHT TO REJECT .....	AB-4
10.	NOTIFICATION TO THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT FOR AFFIRMATIVE ACTION PLAN .....	AB-4
11.	NOTICE CONCERNING DBE GOAL.....	AB-4
12.	PRE-BID MEETING.....	AB-5
13.	CONSENT DECREE REQUIREMENTS.....	AB-5
14.	STATE REVOLVING LOAN REQUIREMENTS.....	AB-6

## ADVERTISEMENT FOR BIDS

### 1. INVITATION

Sealed Bids for the following work will be received by the Lexington-Fayette Urban County Government until **2:00 p.m., local time, October 16, 2018** for furnishing all labor and/or materials and performing all work as set forth by this advertisement, conditions (general and special), Specifications, and/or the Drawings prepared by Hazen and Sawyer. Immediately following the scheduled closing time for reception of Bids, all proposals which have been submitted in accordance with the above will be publicly opened and read aloud.

### 2. DESCRIPTION OF WORK

The Project includes providing all construction supervision, labor, materials, tools, test equipment necessary for the:

- Removal, repair, rehabilitation, reinstallation of the existing final clarifier mechanisms and bridges in Final Clarifiers No. 7 & No. 8, and all associated piping, painting and electrical appurtenances included and shown on the Contract Documents.
- Removal and replacement of new sluice gates at existing Final Clarifier Flow Splitter Box No. 1 & No. 2 and all associated appurtenances.
- Removal of 8" concrete slab and swept-in grout layer in existing Final Clarifiers No. 7 & No. 8.
- Cutting off of existing rock anchors in existing Final Clarifiers No. 7 & No. 8.
- Installation of new rock anchors, concrete base slab and swept-in grout in existing Final Clarifiers No. 7 & No. 8.
- Allowances are provided in Bid for under slab pipe replacement and existing Walker clarifier rehabilitation and repair work.

### 3. OBTAINING PLANS, SPECIFICATIONS, AND BID DOCUMENTS

Plans, Specifications, and Contract Documents may be obtained from the official bid document distributor, Lynn Imaging, 328 Old Vine Street, Lexington, KY 40507, (859) 255-1021 or ([www.lynnimaging.com](http://www.lynnimaging.com)) and click on plan room for a non-refundable price of reproduction for each full set of plans and documents.

Specifications, Plans, and Bid Documents may be examined at the following places:

LFUCG  
Division of Central Purchasing  
200 East Main Street, Third Floor, Rm 338  
Lexington, Kentucky 40507  
(859) 258-3320

LFUCG  
Division of Water Quality  
125 Lisle Industrial Avenue, Suite 180  
Lexington, Kentucky 40511  
(859) 425-2400

### 4. METHOD OF RECEIVING BIDS

Bids will be received from Prime Contracting firms on a lump sum basis, for total Project Area. Bids shall be submitted in the manner and subject to the conditions as set forth and described in the Instruction to Bidders and Special Conditions.

Sealed bids shall be clearly marked on the outside of the container as follows: Company Name and Address, Bid Invitation Number, and the Project Name. Bids are to remain sealed until official Bid closure time.

Mailed bids/proposals should be sent to the Director, Division of Central Purchasing, 200 East Main Street, Lexington, KY 40507.

**5. METHOD OF AWARD**

The Contract, if awarded, will be to the lowest, qualified responsible Bidder for the total project whose qualifications indicate the award will be in the best interest of the OWNER and whose bid/proposal complies with all the prescribed requirements. No Notice of Award will be given until the OWNER has concluded such investigation as deemed necessary to establish the responsibility, qualifications and financial ability of Bidders to do the work in accordance with the Contract Documents to the satisfaction of the OWNER within the time prescribed. The OWNER reserves the right to reject the Bid of any Bidder who does not pass such investigation to the OWNER's satisfaction. In analyzing Bids, the OWNER may take into consideration alternate and unit prices, if requested by the Bid forms.

**6. BID WITHDRAWAL**

No Bidder may withdraw his bid for a period of sixty (60) calendar days after the closing date for receipt of Bids. Errors and omissions will not be cause for withdrawal of Bid without forfeit of Bid Bond. Bids may be withdrawn in person prior to the closing date of receipt of bids.

**7. BID SECURITY**

If the bid is \$50,000 or greater, bid shall be accompanied by a certified / cashier's check or Bid Bond payable to the Lexington-Fayette Urban County Government in an amount not less than Five Percent (5%) of the base bid. Bid Bond shall be executed by a Surety Company authorized to do business in the Commonwealth of Kentucky and countersigned by a licensed Kentucky Resident Agent, representing the Surety Company. Bid Bonds are not required for Bids under \$50,000. A certified check or cashier's check is also acceptable forms of bid security.

**8. SUBMISSION OF BIDS**

CONTRACTORS shall submit their Bids to the Lexington-Fayette Urban County Government, Division of Purchasing, Third Floor, 200 East Main Street, Lexington, Kentucky 40507. Bids shall be submitted in a sealed envelope not later than 2:00 p.m., local time, October 16, 2018. Sealed Bids shall be clearly marked on the outside of the container as follows: Company Name and Address, Bid Invitation Number, and Project Name to be **opened at 2:00 pm local time, October 16, 2018**. Bids received after the scheduled closing time for receipt of Bids will not be considered and will be returned unopened.

**9. RIGHT TO REJECT**

The Purchasing Agent for the Lexington-Fayette Urban County Government reserves the right to reject any and all Bids and to waive all informalities and/or technicalities where the best interest of the Lexington-Fayette Urban County Government may be served.

**10. NOTIFICATION TO THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT FOR AFFIRMATIVE ACTION PLAN AND CURRENT WORKFORCE**

The successful Bidder must submit with their Bid the following items to the Lexington-Fayette Urban County Government:

1. Affirmative Action Plan for his/her firm.
2. Current Workforce Analysis Form.

Failure to submit these items as required herein may result in disqualification of the Bidder from the award of the Contract.

All submissions should be directed to:

Lexington-Fayette Urban County Government  
Division of Purchasing  
200 East Main Street, 3<sup>rd</sup> Floor, Room 338  
Lexington, Kentucky 40507

**11. NOTICE CONCERNING MWD BE GOAL**

Notice of requirement for Affirmative Action to ensure Equal Employment Opportunities and Disadvantaged Business Enterprises (DBE) Contract participation. Disadvantaged Business Enterprises (DBE) consists of Minority-Owned Business Enterprises (MBE), Veteran-Owned Small Businesses (VOSB) and Woman-Owned Business Enterprises (WBE).

The Lexington-Fayette Urban County Government has set a goal that not less than ten percent (10%) of the total value of this Contract be subcontracted to Disadvantaged Business Enterprises, which is made up of MBEs and WBEs. The Lexington Fayette Urban County Government also has set a goal that not less than three percent (3%) of the total value of this Contract be subcontracted to Veteran-Owned Small Businesses. The goal for the utilization of Disadvantaged Business Enterprises as well as Veteran-Owned Small Businesses as subcontractors is a recommended goal. Contractor(s) who fail to meet such goal will be expected to provide written explanations to the Director of the Division of Purchasing of efforts they have made to accomplish the recommended goal, and the extent to which they are successful in accomplishing the recommended goal will be a consideration in the procurement process. Depending on the funding source, other DBE goals may apply.

For assistance in locating Disadvantaged Business Enterprises Subcontractors contact:

Sherita Miller, Minority Business Enterprise Liaison  
Division of Central Purchasing  
Lexington-Fayette Urban County Government  
200 East Main Street, 3rd Floor, Room 338  
Lexington, Kentucky 40507  
[smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov)



**12. PRE-BID MEETING AND ADDENDA**

A non-mandatory pre-bid meeting will be held at 2:00 pm (local time), October 2, 2018 at West Hickman Wastewater Treatment Plant, 645 West Hickman Plant Road, Nicholasville, KY 40356 in the conference room. A visit will be held immediately following the Prebid Meeting.

All bid questions must be submitted (to Brian Marcum, [brianm@lexingtonky.com](mailto:brianm@lexingtonky.com)) by 5:00 pm (local time), October 5, 2018 to be addressed in an addendum.

The Final Addendum will be issued on October 9, 2018.

**13. CONSENT DECREE REQUIREMENTS**

There are no Consent Decree requirements in this Contract.

**14. STATE REVOLVING LOAN REQUIREMENTS**

This project is not funded by the Kentucky Infrastructure Revolving Loan Fund.

Bidders must comply with Title VI of the Civil Rights Act of 1964, the Anti-Kickback Act, and the Contract Work Hours Standard Act.

Bidders must comply with the President's Executive Order No. 11246 as amended, which prohibits discrimination in employment regarding race, creed, color, sex, or national origin.

Successful Bidder shall comply with 41 CFR 60-4, in regard to affirmative action, to insure equal opportunity to females and minorities and will apply the time tables and goal set forth in 40 CFR 60-4.

Successful Bidder shall make positive efforts to use small, minority, women-owned, and disadvantaged businesses.

Attention of Bidders is particularly called to the conditions of employment to be observed and minimum wage rates to be paid under the Contract, Section 3, Segregated Facility, Section 109 and E.O. 11246 and Title VI. Minority bidders are encouraged to bid.

**Successful Bidder is required to employ the six "Good Faith Efforts" as listed in EPA's Disadvantaged Business Enterprise Program when soliciting subcontractors and suppliers. Documentation of these efforts will be a required submittal prior to Contract Award.**

The Contract Award will be made in writing to the lowest responsive and responsible Bidder whose qualifications indicate the award will be in the best interest of the OWNER and whose Bid/Proposal complies with all the prescribed requirements. No Notice of Award will be given until the OWNER has concluded such investigation as deemed necessary to establish and responsibility, qualifications and financial ability of Bidders to do the work in accordance with the Contract Documents to the satisfactions of the OWNER within the time prescribed. The OWNER reserves the right to reject the Bid of any Bidder who does not pass such investigation to the OWNER's satisfaction. In analyzing Bids, the OWNER may take into consideration alternate and unit prices, if requested by the Bid forms.

END OF SECTION

**PART II**

**INFORMATION FOR BIDDERS**

**INDEX**

1. RECEIPT AND OPENING OF BIDS .....	IB-2
2. PREPARATION OF BID .....	IB-2
3. SUBCONTRACTS .....	IB-2
4. QUALIFICATION OF BIDDER .....	IB-2
5. BID SECURITY.....	IB-4
6. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT.....	IB-4
7. TIME OF COMPLETION AND LIQUIDATED DAMAGES.....	IB-4
8. EXAMINATION OF CONTRACT DOCUMENTS AND SITE.....	IB-4
9. ADDENDA AND INTERPRETATIONS.....	IB-5
10. SECURITY FOR FAITHFUL PERFORMANCE .....	IB-5
11. POWER OF ATTORNEY .....	IB-6
12. TAXES AND WORKMEN'S COMPENSATION .....	IB-6
13. LAWS AND REGULATIONS .....	IB-6
14. EROSION AND SEDIMENT CONTROL AND PERMITS.....	IB-6
15. PREVAILING WAGE LAW AND MINIMUM HOURLY RATES.....	IB-6
16. AFFIRMATIVE ACTION PLAN .....	IB-7
17. CONTRACT TIME.....	IB-7
18. SUBSTITUTE OR "OR-EQUAL" ITEMS.....	IB-7
19. ALTERNATE BIDS.....	IB-7
20. SIGNING OF AGREEMENT.....	IB-8
21. ASSISTANCE TO BE OFFERED TO DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) CONTRACTORS.....	IB-8

**PART II**  
**INFORMATION FOR BIDDERS**

**1. RECEIPT AND OPENING OF BIDS**

The Lexington-Fayette Urban County Government (herein called the OWNER) invites bids from firms on the project described in the Advertisement for Bids. The OWNER will receive Bids at the Division of Purchasing, at the time and in the manner set forth in the Advertisement for Bids, and the Bids will then be publicly opened and read aloud. The OWNER may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all Bids. Any Bid may be withdrawn prior to the scheduled time for the opening of Bids or authorized postponement thereof. Any Bid received after the time and date specified shall not be considered. No Bidder may withdraw a bid within 60 days after the actual time and date of the Bid opening, but OWNER may, in its sole discretion, release any bid and return the Bid Security prior to that date.

The Lexington-Fayette Urban County Government assumes no responsibility for Bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected

**2. PREPARATION OF BID**

Each Bid must be submitted on the prescribed Form of Proposal. All blank spaces for the Bid prices must be filled in, either in ink or typewritten, for both unit prices and extensions. Totals for each Bid item must be added to show the total amount of the Bid. Each Bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, their address, the name of the project, the invitation number and time and date for which the Bid is submitted. Bids must be addressed to the Director of Purchasing, Lexington-Fayette Urban County Government, Third Floor, 200 East Main Street, Lexington, Kentucky 40507. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed as specified above.

**3. SUBCONTRACTS**

The Bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the OWNER. All proposed subcontractors must be identified on the Form of Proposal. Prior to the award of Contract, the OWNER or the OWNER'S representative will advise the CONTRACTOR of the acceptance and approval thereof or of any action necessary to be taken. Should any Subcontractor be rejected by the OWNER, the CONTRACTOR shall present a new name and/or firm to the OWNER at no change in the Contract Price.

**4. QUALIFICATION OF BIDDER**

The OWNER may make such investigations as the OWNER deems necessary to determine the ability of the Bidder to perform the Work, and the Bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request.

The OWNER reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the OWNER that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein. Conditional Bids will not be accepted.

In evaluating Bids, OWNER shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternatives and unit prices, as requested. OWNER may consider maintenance requirements, performance data, and disruption or damage to private property. It is OWNER'S intent to accept alternatives, if requested by the Bid forms, in the order in which they are listed in the Bid Form but OWNER may accept or decline them in any order or combination. The Contract, if awarded, will be awarded to the lowest, qualified, responsible Bidder based upon OWNER'S evaluation which indicates that the award will be in the best interest of OWNER and the general public.

In the event there is any question as to the Bidder's qualifications and ability to complete the work, a final determination will be made in accordance with a fair evaluation by the Urban County Government of the above listed elements.

- A. If the OWNER requires filling out a detailed financial statement, the Bidder may provide its current certified financial statement(s) for the required time interval.
- B. Corporate firms are required to be registered and in good standing with the requirements and provisions of the Office of the Secretary of State, Commonwealth of Kentucky.
- C. Good standing with Public Works Act - any CONTRACTOR and/or subcontractors in violation of any wage or work act provisions (KRS 337.510 to KRS 337.550) are prohibited by Statutory Act (KRS 337.990) from bidding on or working on any and all public works contracts, either in their name or in the name of any other company, firm or other entity in which he might be interested. No bid from a prime contractor in violation of the Act can be considered, nor will any subcontractor in violation of the Act be approved and/or accepted. The responsibility for the qualifications of the subcontractor is solely that of the Contractor.
- D. Documents Required of CONTRACTOR - (1) A sworn statement signed by the President or owner of the Company regarding all current work in progress anywhere; (2) A document showing the percent of completion of each project and the total worth of each project; and (3) Documentation showing the percentage of the DBE employment levels on each project of the Bidder's current work force, and DBE participation levels for Subcontractors.
- E. Optional OWNER Requirements - The OWNER, at its discretion, may require the Bidder/CONTRACTOR to provide: (1) a current detailed financial statement for a period including up to 3 prior years; (2) financial security or insurance in amounts and kinds acceptable to the OWNER to meet the financial responsibility requirements for the CONTRACTOR to indemnify the OWNER. (3) Additional information and/or DBE work force data, as well as DBE participation data.

**Each Bidder agrees to waive any claim it has or may have against the Owner, the Architect/Engineer, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.**

**5. BID SECURITY**

- A. Each bid must be accompanied by a Bid Bond prepared on a Form of Bid Bond and attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the OWNER, in the amount of 5% of the Bid. Such Bid Bond will be returned to the unsuccessful Bidder(s) only upon written request to the Director of Central Purchasing within seven (7) days of opening of Bids. Bid Bond shall be made payable to the Lexington-Fayette Urban County Government. Bid security is not required for projects under \$50,000.
- B. Bonds shall be placed with an agent licensed in Kentucky with surety authorized to do business within the state. When the premium is paid for such coverage, the full commission payable shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.

**6. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT**

The successful Bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within ten (10) days after he has received notice of the acceptance of his Bid, shall forfeit to the OWNER, as liquidated damages for such failure or refusal, the Bid security deposited with his Bid.

**7. TIME OF COMPLETION AND LIQUIDATED DAMAGES**

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the OWNER and to fully complete the Project within the time as specified in the Contract. Bidder must agree also to pay \$850.00 per day as liquidated damages, or the sum as specified in the Contract for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

**8. EXAMINATION OF CONTRACT DOCUMENTS AND SITE**

- A. It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site(s) to become familiar with local conditions that may affect cost, progress, performance or furnishing of the work, (c) consider Federal, State and Local laws and regulations that may affect cost, progress, performance or furnishing of the work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify Engineer of all conflicts, errors or discrepancies in the Contract Documents.
- B. Bidders should examine the requirements of section 4 of the General Conditions for information pertaining to subsurface conditions, underground structures,

underground facilities, and availability of lands, easements, and rights-of-way. The completeness of data, presented in the Contract Documents, pertaining to subsurface conditions, underground structures, and underground facilities for the purposes of bidding or construction is not assured. The Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface and subsurface) which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents. On request in advance, OWNER will provide access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.

- C. The submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this paragraph 8; that without exception the Bid is premised upon furnishing and performing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## 9. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Contract Documents will be made to any Bidder orally. Every request for such interpretation should be in writing addressed to the Director of Central Purchasing, or emailed to Brian Marcum at [BrianM@LexingtonKY.gov](mailto:BrianM@LexingtonKY.gov) who in turn will have an Addendum issued for the Lexington-Fayette Urban County Government, and to be given consideration must be received prior to the date fixed for the opening of Bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the Specifications. Acknowledgement of the receipt of addenda must be included with all submitted bids. Failure of any Bidder to receive any such addendum or interpretation shall not relieve such Bidder from any obligation under his Bid as submitted. All addenda so issued shall become part of the Contract Documents.

## 10. SECURITY FOR FAITHFUL PERFORMANCE

- A. Simultaneously with his delivery of the executed Contracts, the CONTRACTOR shall furnish a surety bond or bonds as security for the faithful performance of this Contract and for payment of all persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract, as specified in the General Conditions. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the OWNER and authorized to do business in the Commonwealth of Kentucky.

- B. All bonds required by this Contract and laws of this State shall be placed with agents licensed in the State of Kentucky. When the premium is paid for such coverage's, the full commission shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.
- C. Contractor shall use standard Performance and Payment Bond forms such as documents provided with this Contract book or AIA form A312-1984 (or later). Each document will be for 100% of the Contract Bid Amount.

**11. POWER OF ATTORNEY**

Attorney-in-fact who signs Bid Bonds or Contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

**12. TAXES AND WORKMEN'S COMPENSATION**

The CONTRACTOR and subcontractor will be required to accept liability for payment of all payroll taxes, sales and use tax, and all other taxes or deductions required by local, state or federal law, such as old age pension, social security, or annuities measured by wages. Each shall carry Workmen's Compensation Insurance to the full amounts as required by Statutes and shall include the cost of all foregoing items in the Bid. The CONTRACTOR will not otherwise be reimbursed or compensated for such tax payments. The CONTRACTOR is urged to ascertain at his own risk his actual tax liability in connection with the execution or performance of his Contract.

**13. LAWS AND REGULATIONS**

The Bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the contract, the same as though herein written out in full.

**14. EROSION AND SEDIMENT CONTROL AND PERMITS**

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall also comply with all applicable federal, state, and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits as described in Part 4 General Conditions Paragraph 5.11.

**15. PREVAILING WAGE LAW AND MINIMUM HOURLY RATES**

Federal wage rates and regulations, if required for this Project, will be as described in the Special Conditions.



**16. AFFIRMATIVE ACTION PLAN**

The successful Bidder must submit with their Bid, the following items to the Urban County Government:

1. Affirmative Action Plan of the firm
2. Current Work Force Analysis Form
3. Good Faith Effort Documentation
4. List of Disadvantaged Business Enterprise Subcontractors and the dollar value of each subcontract

A Work Force Analysis Form shall be submitted for each Contract. Failure to submit these items as required herein may result in disqualification of the Bidder from award of the Contract.

All submissions should be directed to:

Director, Division of Central Purchasing  
Lexington-Fayette Urban County Government  
200 East Main Street, Third Floor  
Lexington, KY 40507

**17. CONTRACT TIME**

The number of calendar days within which the Work is to be substantially completed and ready for final payment (the Contract Time) is set forth in the Form of Proposal and the Agreement.

**18. SUBSTITUTE OR "OR-EQUAL" ITEMS**

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by the CONTRACTOR if acceptable to the ENGINEER and OWNER, application for such acceptance will not be considered by the ENGINEER and OWNER until after the effective date of the Agreement. The procedure for submission of any such application by the CONTRACTOR and consideration by the ENGINEER and OWNER is set forth in the General Conditions.

**19. ALTERNATE BIDS**

Bidders shall submit alternate Bids/Proposals only if and when such alternate bids/Proposals have been specifically requested in an Invitation for Bids. If alternate Bids/Proposals are requested in an Invitation for Bids, the form of submission of such alternate Bid and the conditions under which such alternate Bids will be considered for award of a Contract will be established in the Invitation.

Any Bidder who submits a bid incorporating an alternate proposal when alternate bids/proposals have not been requested in the Invitation for Bids shall have their Bid rejected as non-responsive.

Any Bidder who submits a bid incorporating two (2) or more prices for an item or groups of items (unless such method of pricing is requested in the Invitation for Bids), or which imposes conditions for acceptance other than those established in the Invitation for Bids, shall have their Bid rejected as non-responsive.

**20. SIGNING OF AGREEMENT**

When OWNER gives a Notice of Award to the successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within ten days thereafter, CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds, Certificate of Insurance, and Power of Attorney. The OWNER will deliver one fully signed counterpart to CONTRACTOR at such time as it has been signed by the Mayor.

**21. ASSISTANCE TO BE OFFERED TO DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) CONTRACTORS**

**A. Outreach for MWDBE(s)**

The Lexington-Fayette Urban County Government (LFUCG) maintains a database of MWDBE contractors and organizations. When a LFUCG construction project is advertised for bidding, notices are sent to companies registered at <https://lexingtonky.ionwave.net>. The notices describe the project and indicate the deadline for submitting bids.

If you wish to be added to the LFUCG MWDBE contractor database, please contact:

Sherita Miller, Minority Business Enterprise Liaison  
Division of Central Purchasing  
Lexington-Fayette Urban County Government  
200 East Main Street, Room 338  
Lexington, Kentucky 40507  
[smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov)

**B. Bid Bond Assistance for MWDBE(s)**

For those MWDBE contractors who wish to bid on LFUCG project, Bid Bond assistance is available. This Bid Bond assistance is in the form of a "Letter of Certification" which is accepted by the LFUCG's Division of Purchasing, in lieu of a Bid Bond. The "Letter of Certification" must be included in the Bid package when it is submitted to the Division of Purchasing. The "Letter of Certification" will reference the specific project for which the Bid is being submitted, and the time and date on which the Bid is due. Bid Bond assistance must be requested from

the Lexington-Fayette Urban County Government's Division of Central Purchasing.

C. Eligibility for Bid Bond Assistance for MWDBE(s)

In order to be eligible for any Bid bonding assistance, a MWDBE construction company must be owned or controlled at the level of 51% or more by a member or members of a minority group or females. Prior to receiving assistance, a statement providing evidence of ownership and control of the company by a member or members of a minority group or females must be signed by the Owner or corporate officer and by an attorney or accountant submitted to:

Sherita Miller, Minority Business Enterprise Liaison  
Division of Central Purchasing  
Lexington-Fayette Urban County Government  
200 East Main Street, Room 338  
Lexington, Kentucky 40507  
[smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov)

D. MWDBE and Veteran Subcontractors

The LFUCG will, upon request, assist Contractors in the procurement of eligible DBE subcontractors in an effort to achieve 10% minimum MWDBE and 3% minimum veteran goal.

For a list of eligible subcontractors, please contact:

Sherita Miller, Minority Business Enterprise Liaison  
Division of Central Purchasing  
Lexington-Fayette Urban County Government  
200 East Main Street, Room 338  
Lexington, Kentucky 40507  
[smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov)

END OF SECTION

**PART III**  
**FORM OF PROPOSAL**

**INDEX**

1.	FORM OF PROPOSAL .....	P-2
2.	LEGAL STATUS OF BIDDER .....	P-3
3.	BIDDERS AFFIDAVIT .....	P-4
4.	BID SCHEDULE – SCHEDULE OF VALUES .....	P-5
5.	STATEMENT OF BIDDER'S QUALIFICATIONS .....	P-7
6.	LIST OF PROPOSED SUBCONTRACTORS.....	P-10
7.	LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT MWDBE PARTICIPATION GOALS, FORMS, AND GOOD FAITH EFFORTS .....	P-11
8.	AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-CONFLICT OF INTEREST .....	P-23
9.	STATEMENT OF EXPERIENCE.....	P-24
10.	EQUAL OPPORTUNITY AGREEMENT.....	P-26
11.	EQUAL EMPLOYMENT OPPORTUNITY AFFIRMATIVE ACTION POLICY.....	P-29
12.	WORKFORCE ANALYSIS .....	P-30
13.	EVIDENCE OF INSURABILITY.....	P-31
14.	DEBARRED FIRMS .....	P-32
15.	DEBARRED CERTIFICATION .....	P-33

**PART III**

**Invitation to Bid No. 130-2018**

**WH WWTP FINAL CLARIFIERS NO. 7 & NO. 8 STRUCTURAL REPAIRS**

**1. FORM OF PROPOSAL**

Place: Lexington, Kentucky

Date: October 19, 2018

The following Form of Proposal shall be followed exactly in submitting a proposal for this Work.

This Proposal Submitted by Judy Construction Company

103 South Church Street, Cynthiana, KY 41031  
(Name and Address of Bidding Contractor)

(Hereinafter called "Bidder"), organized and existing under the laws of the State of Kentucky, doing business as a corporation  
"a corporation," "a partnership", or an "individual" as applicable.

To: Lexington-Fayette Urban County Government  
(Hereinafter called "OWNER")  
Office of the Director of Purchasing  
200 East Main Street, 3rd Floor  
Lexington, KY 40507

Gentlemen:

The Bidder, in compliance with your Invitation for Bids for the **West Hickman WWTP Final Clarifiers No. 7 & No. 8 Structural Repairs** having examined the Contract Documents with related documents, having examined the site for proposed Work, and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the Project in accordance with the Contract Documents, within the time set forth therein, and at the lump sum and/or unit prices stated hereinafter. These prices are to cover all expenses incurred in performing the Work required under the Contract Documents, of which this Proposal is a part. The OWNER will issue work orders for work to be performed under this Contract.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in the Notice to Proceed and to fully complete the project within the time provided in the Purchase Order or Work Orders issued by the OWNER. Bidder further agrees to pay liquidated damages, the sum of \$850.00 for each consecutive calendar day thereafter.

The Bidder hereby acknowledges receipt of the following addenda:

Addendum No. 1 Date 10/03/2018

50029-008: 9/24/18

FP-2

LFUCG – WH WWTP FINAL CLARIFIERS  
NO. 7 & NO. 8 STRUCTURAL REPAIRS

Addendum No. 2 Date 10/05/2018

Addendum No. 3 Date 10/12/2018

Addendum No.      Date                     

Addendum No.      Date                     

Addendum No.      Date                     

Addendum No.      Date                     

Addendum No.      Date                     

Insert above the number and the date of any Addendum issued and received. If none has been issued and received, the word "NONE" should be inserted.

**2. LEGAL STATUS OF BIDDER**

Bidder Judy Construction Company

Date October 19, 2018

\* 1. A corporation duly organized and doing business under the laws of the State of Kentucky, for whom Steve Judy, bearing the official title of President, whose signature is affixed to this Bid/Proposal, is duly authorized to execute contracts.

\* 2. ~~A Partnership, all of the members of which, with addresses are: (Designate general partners as such)~~

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\* 3. ~~An individual, whose signature is affixed to this Bid/Proposal (please print name)~~

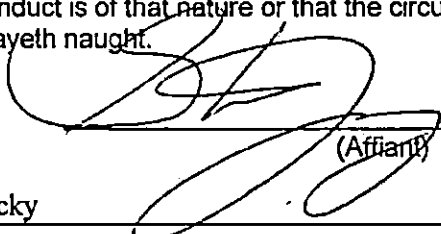
\_\_\_\_\_  
\_\_\_\_\_

\*(The Bidder shall fill out the appropriate form and strike out the other two.)

3. BIDDERS AFFIDAVIT

Comes the Affiant, Steve Judy, and after being first duly sworn, states under penalty of perjury as follows:

1. His/her name is Steve Judy and he/she is the individual submitting the Bid or is the authorized representative of Judy Construction Company, the entity submitting the bid (hereinafter referred to as "Bidder").
2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the Contract and will maintain a "current" status in regard to those taxes and fees during the life of the Contract.
3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.
4. Bidder has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.
5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a Contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.
6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as the "Ethics Act."
7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.  
Further, Affiant sayeth naught.

  
(Affiant)

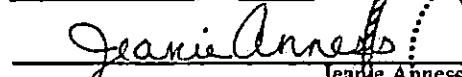
Steve Judy, President

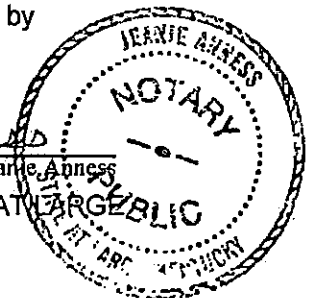
STATE OF Kentucky  
COUNTY OF Harrison

The foregoing instrument was subscribed, sworn to and acknowledged before me by

Steve Judy on this the 19th day of October, 20 18.

My Commission expires: August 1, 2019

  
Jeanie Anness  
NOTARY PUBLIC, STATE OF KENTUCKY



**4. BID SCHEDULE – SCHEDULE OF VALUES**

The Bidder agrees to perform all the Work described in the Specifications and shown on the Drawings for the following proposed lump sum price with allowances, if applicable, which shall include the furnishing of all labor, materials, supplies, equipment and/or vehicle usage, services, all items of cost, overhead, taxes (federal, state, local), and profit for the Contractor and any subcontractor involved, within the time set forth herein. If unit prices are applicable, Bidder must make the extensions and additions showing the total amount of Bid.

Form of proposal must include lump sum price(s) written in words, lump sum price written in numbers and total amount bid (unit price x quantity) per line item OR bid may be considered non-responsive. In case of price discrepancy, lump sum bid price written in words will prevail followed by lump sum price written in numbers then total amount bid per line item.

For a lump sum based Bid, the item total is the Bid amount the Division uses for Bid comparison.

For a unit price based Bid, the sum of the item totals is the Bid amount the Division uses for Bid comparison.

The LFUCG's decision on the Bid amount is final.

The Contract, if awarded, will be on the basis of materials and equipment specified in the Specifications without consideration of possible substitute or "or equal" items.

The estimated quantities of items of unit price work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract price. Determination of the actual quantities and classification of unit price work performed by the Contractor will be made by the Engineer in accordance with the General Conditions.

The Owner's decision on the bid amount is final.

**BID SCHEDULE**

Item	Description	Qty	Unit	Unit Price	Item Bid Price
1.	<p>The Project includes providing all construction supervision, labor, materials, tools, test equipment necessary for the:</p> <ul style="list-style-type: none"> <li>• Removal, reinstallation of the existing final clarifier mechanisms and bridges in Final Clarifiers No. 7 &amp; No. 8, and all associated piping, painting and electrical appurtenances included and shown on the Contract Documents.</li> <li>• Removal and replacement of new sluice gates at existing Final Clarifier Flow Splitter Box No. 1 &amp; No. 2 and all associated appurtenances.</li> <li>• Removal of 8" concrete slab and swept-in grout layer in existing Final Clarifiers No. 7 &amp; No. 8.</li> </ul>	1	LS	1,533,495	1,533,495



	<ul style="list-style-type: none"> <li>Cutting off of existing rock anchors in existing Final Clarifiers No. 7 &amp; No. 8.</li> <li>Installation of new rock anchors, concrete base slab and swept-in grout in existing Final Clarifiers No. 7 &amp; No. 8.</li> </ul>				
2.	Allowance: Walker Final Clarifier Equipment Repair and Rehabilitation	1	LS	\$81,505.00	\$81,505.00
TOTAL BID (Items 1 thru 2)				\$ 1,615,000	

Notes: 1. See Specification Section 01210 – Allowance(s) for additional information.

TOTAL OF ALL BID PRICES FOR the West Hickman WWTP Final Clarifiers No. 7 & No. 8 Structural Repairs Project (Items 1 through 2) in words and figures. In case of discrepancy, the amount shown in words will govern.

ONE MILLION SIX HUNDRED  
FIFTEEN THOUSAND DOLLARS  
(\$ 1,615,000).

Submitted by: Judy Construction Company  
*Firm*

103 South Church Street  
*Address*

Cynthiana, KY 41031  
*City, State & Zip*

*Bid must be signed:  
(original signature)*  President  
*Signature of Authorized Company Representative – Title*

Steve Judy  
*Representative/s Name (Typed or Printed)*

859-234-6900 x 103 859-234-3480  
*Area Code – Phone – Extension* *Fax #*

sjudy@judyconstructionco.com  
*E-Mail Address*

OFFICIAL ADDRESS:  
103 South Church Street

P.O. Box 457

Cynthiana, KY

41031 (Seal if Bid is by Corporation)

**By signing this form, you agree to ALL terms, conditions, and associated forms in this Bid package**

**5. STATEMENT OF BIDDER'S QUALIFICATIONS**

The following statement of the Bidder's qualifications is required to be filled in, executed, and submitted with the Bid:

1. Name of Bidder: Judy Construction Company
2. Permanent Place of Business: 103 South Church Street, Cynthiana, KY 41031
3. When Organized: 04/09/1974
4. Where Incorporated: Kentucky
5. Construction Plant and Equipment Available for this Project:  
See Attachment A  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Attach Separate Sheet If Necessary)

**6. Financial Condition:**

If specifically requested by the OWNER, the apparent low Bidder is required to submit its latest three (3) years audited financial statements to the OWNER'S Division of Central Purchasing within seven (7) calendar days following the bid opening.

7. In the event the Contract is awarded to the undersigned, surety bonds will be furnished by:  
Continental Casualty Company (Surety)

Signed: Paula J. Teague (Representative of Surety)  
 Paula J. Teague, Atty-in-Fact

8. The following is a list of similar projects performed by the Bidder. (Attach separate sheet if necessary).

<u>NAME</u>	<u>LOCATION</u>	<u>CONTRACT SUM</u>
<u>SEE ATTACHMENT B</u>		

9. The Bidder has now under contract and bonded the following projects:

<u>NAME</u>	<u>LOCATION</u>	<u>CONTRACT SUM</u>
<u>SEE ATTACHMENT C</u>		

10. List Key Bidder Personnel who will work on this Project.

<u>NAME</u>	<u>POSITION DESCRIPTION</u>	<u>NO. OF YEARS WITH BIDDER</u>
<u>SEE ATTACHMENT D</u>		

11. DBE Participation on current bonded projects under contract:

<u>SUBCONTRACTORS (LIST)</u>	<u>PROJECT (SPECIFIC TYPE)</u>	<u>DBE</u>	<u>% of WORK</u>
<u>SEE ATTACHMENT C - Judy Construction Company</u>	<u>Work On Hand</u>		

(USE ADDITIONAL SHEETS IF NECESSARY)

12. We acknowledge that, if we are the apparent low Bidder, we may be required to submit to the OWNER within 7 calendar days following the Bid Opening, a sworn statement regarding all current work on hand and under contract, and a statement on the OWNER'S form of the experience of our officers, office management and field management personnel. Additionally, if requested by the OWNER, we will within 7 days following the request submit audited financial statements and loss history for insurance claims for the 3 most recent years (or a lesser period stipulated by the OWNER).

**6. LIST OF PROPOSED SUBCONTRACTORS**

The following list of proposed subcontractors is required by the OWNER to be executed, completed and submitted with the Bidder's FORM OF PROPOSAL. All subcontractors are subject to approval of the Lexington-Fayette Urban County Government. Failure to submit this list completely filled out may be cause for rejection of Bid.

<u>BRANCH OF WORK - LIST EACH MAJOR ITEM</u> Such as: Grading, bituminous paving, concrete, seeding and protection, construction staking, etc.	<u>SUBCONTRACTOR</u>	<u>DBE</u>	<u>% of Work</u>	<u>Yes/No</u>
1. <u>ELECTRICAL</u>	Name: <u>TEM ELECTRIC</u> Address: <u>LOUISVILLE, KY</u>		<u>1.8%</u>	<u>YES</u>
2. <u>PAINTING</u>	Name: <u>McKENNEY</u> Address: <u>LOUISVILLE, KY</u>		<u>6.8%</u>	<u>YES</u>
3. _____	Name: _____ Address: _____			
4. _____	Name: _____ Address: _____			
5. _____	Name: _____ Address: _____			
6. _____	Name: _____ Address: _____			
7. _____	Name: _____ Address: _____			

(Attach additional sheet(s) if necessary.)

**7. LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT MWDBE PARTICIPATION GOALS, FORMS, AND GOOD FAITH EFFORTS**

**A. GENERAL**

- 1) The LFUCG request all potential contractors to make a concerted effort to include Minority-Owned (MBE), Woman-Owned (WBE), Disadvantaged (DBE) Business Enterprises and Veteran-Owned Small Businesses (VOSB) as subcontractors or suppliers in their Bids.
- 2) Toward that end, the LFUCG has established 10% of total procurement costs as a Goal for participation of Minority-Owned, Woman-Owned and Disadvantaged Businesses on this Contract.
- 3) The LFUCG has also established a 3% of total procurement costs as a Goal for participation of Veteran-Owned Small Businesses.
- 4) **It is therefore a request of each Bidder to include in its bid, the same goal (10%) for MWDBE participation, the same goal (3%) veteran participation and other requirements as outlined in this section.**

**B. PROCEDURES**

- 1) The successful Bidder will be required to report to the LFUCG, the dollar amounts of all payments submitted to Minority-Owned, Veteran-Owned and Woman-Owned subcontractors and suppliers for work done or materials purchased for this contract. (See Subcontractor Monthly Payment Report)
- 2) Replacement of a Minority-Owned, Veteran-Owned or Woman-Owned subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another MWDBE Firm; this is subject to approval by the LFUCG. (See LFUCG MWDBE Substitution Form)
- 3) For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, Bidders may contact:
  - a) The Lexington-Fayette Urban County Government, Division of Central Purchasing (859-258-3320)
- 4) The LFUCG will make every effort to notify interested MWDBE and veteran subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the Project.

**C. DEFINITIONS**

- 1) A MBE is defined as a business which is certified as being at least 51% owned and operated by persons of African American, Hispanic, Asian, Pacific Islander, American Indian or Alaskan Native Heritage.
- 2) A WBE is defined as a business which is certified as being at least 51% owned and operated by one or more Non-Minority Females.

- 3) A DBE is defined as a business which is certified as being at least 51% owned and operated by a person(s) that are economically and socially disadvantaged.
- 4) A VOSB is defined as a business which is certified as being at least 51% owned and operated by a veteran and/or a service disabled veteran.
- 5) Good Faith Efforts are efforts that, given all relevant circumstances, a Bidder or proposer actively and aggressively seeking to meet the goals, can reasonably be expected to make. In evaluating good faith efforts made toward achieving the goals, whether the Bidder or proposer has performed the efforts outlined in the Obligations of Bidder for Good Faith Efforts outlined in this document will be considered, along with any other relevant factors.

**D. OBLIGATION OF BIDDER FOR GOOD FAITH EFFORTS**

- 1) **The Bidder shall make a Good Faith Effort to achieve the Participation Goal for MWDBE and Veteran subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the Bidder; however, Bidders not meeting the goal are required to furnish with their Bids written documentation of their Good Faith Efforts to do so.**
- 2) Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.
- 3) The Form of Proposal includes a section entitled "MWDBE Participation Form". The applicable information must be completed and submitted as outlined below.
- 4) **Failure to submit this information as requested may be cause for rejection of bid.**

**E. DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS**

- 1) Bidders reaching the Goal are required to submit only the MWDBE Participation Form." The form must be fully completed including names and telephone number of participating MWDBE firm(s); type of work to be performed; estimated value of the contract and value expressed as a percentage of the total Lump Sum Bid Price. The form must be signed and dated, and is to be submitted with the Bid.
- 2) Bidders not reaching the Goal must submit the "MWDBE Participation Form", the "Quote Summary Form" and a written statement documenting their Good Faith Effort to do so. If Bid includes no MWDBE participation, Bidder shall enter "None" on the subcontractor / supplier form). In addition, the Bidder must submit written proof of their Good Faith Efforts to meet the Participation Goal:
  - a. Advertised opportunities to participate in the Contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.
  - b. Included documentation of advertising in the above publications with the Bidders good faith efforts package
  - c. Attended LFUCG Central Purchasing Economic Inclusion Outreach event

d. Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned businesses of subcontracting opportunities

e. Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses.

f. Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

g. Contacted organizations that work with MWDBE companies for assistance in finding certified MWDBE firms and Veteran-Owned businesses to work on this Project. Those contacted and their responses should be a part of the Bidder's good faith efforts documentation.

h. Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

i. Followed up initial solicitations by contacting MWDBEs and Veteran-Owned Businesses to determine their level of interest.

j. Provided the interested MWDBE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

k. Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the Contract goals. This includes, where appropriate, breaking out Contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the Contractor may otherwise perform these work items with its own workforce

l. Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

m. Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a Bid.

n. Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the Bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

o. Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the Bid.



p. Made efforts to expand the search for MWDBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

q. Other--any other evidence that the Bidder submits which may show that the Bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

**Note: Failure to submit any of the documentation requested in this section may be cause for rejection of Bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.**



## MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA  
Minority Business Enterprise Liaison  
Division of Central Purchasing  
Lexington-Fayette Urban County Government  
200 East Main Street  
Lexington, KY 40507  
[smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov)  
859-258-3323

**OUR MISSION:** The mission of the Minority Business Enterprise Program is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long term economic viability of Lexington-Fayette Urban County Government.

To that end the city council adopted and implemented resolution 167-91—Disadvantaged Business Enterprise (DBE) 10% Goal Plan in July of 1991. The resolution states in part (a full copy is available in Central Purchasing):

*"A Resolution supporting adoption of the administrative plan for a ten percent (10%) Minimum goal for disadvantaged business enterprise participation in Lexington-Fayette Urban County Government construction and professional services contracts; Providing that as part of their bids on LFUCG construction contracts, general Contractors shall make a good faith effort to award at least ten percent (10%) of All subcontracts to disadvantaged business enterprises; providing that divisions of LFUCG shall make a good faith effort to award at least ten percent of their Professional services and other contracts to disadvantaged business enterprises..."*

A Disadvantaged Business Enterprise is defined as a business that has been certified as being at least 51% owned, operated and managed by a U.S. Citizen of the following groups:

- African-American
- Hispanic-American
- Asian/Pacific Islander
- Native American/Native Alaskan
- Non-Minority Female
- Economically and Socially Disadvantaged

In addition, to that end the city council also adopted and implemented resolution 167-91—Veteran-owned Businesses, 3% Goal Plan in July of 2015. The resolution states in part (a full copy is available in Central Purchasing):

*"A resolution adopting a three percent (3%) minimum goal for certified veteran-owned small businesses and service disabled veteran-owned businesses for certain of those Lexington-Fayette Urban County contracts related to construction for professional services, and authorizing the Division of Purchasing to adopt and implement guidelines and/or policies consistent with the provisions and intent of this resolution by no later than July 1, 2015."*

We have compiled the list below to help you locate certified MBE, WBE and DBE certified businesses. Below is a listing of contacts for LFUCG Certified MWDBEs and Veteran-Owned Small Businesses in (<https://lexingtonky.ionwave.net>)

<b>Business</b>	<b>Contact</b>	<b>Email Address</b>	<b>Phone</b>
<b>LFUCG</b>	Sherita Miller	<a href="mailto:smiller@lexingtonky.gov">smiller@lexingtonky.gov</a>	859-258-3323
<b>Commerce Lexington – Minority Business Development</b>	Tyrone Tyra	<a href="mailto:ttyra@commercelexington.com">ttyra@commercelexington.com</a>	859-226-1625
<b>Tri-State Minority Supplier Diversity Council</b>	Susan Marston	<a href="mailto:smarston@tsmsdc.com">smarston@tsmsdc.com</a>	502-365-9762
<b>Small Business Development Council</b>	Shirie Hawkins UK SBDC	<a href="mailto:smack@uky.edu">smack@uky.edu</a>	859-257-7666
<b>Community Ventures Corporation</b>	Phyllis Alcorn	<a href="mailto:palcom@evky.org">palcom@evky.org</a>	859-231-0054
<b>KY Transportation Cabinet (KYTC)</b>	Melvin Bynes	<a href="mailto:Melvin.bynes2@ky.gov">Melvin.bynes2@ky.gov</a>	502-564-3601
<b>KYTC Pre-Qualification</b>	Sheila Eagle	<a href="mailto:Sheila.Eagle@ky.gov">Sheila.Eagle@ky.gov</a>	502-782-4815
<b>Ohio River Valley Women's Business Council (WBENC)</b>	Sheila Mixon	<a href="mailto:smixon@orvwbc.org">smixon@orvwbc.org</a>	513-487-6537
<b>Kentucky MWBE Certification Program</b>	Yvette Smith, Kentucky Finance Cabinet	<a href="mailto:Yvette.Smith@ky.gov">Yvette.Smith@ky.gov</a>	502-564-8099
<b>National Women Business Owner's Council (NWBOC)</b>	Janet Harris-Lange	<a href="mailto:janet@nwbo.org">janet@nwbo.org</a>	800-675-5066
<b>Small Business Administration</b>	Robert Coffey	<a href="mailto:robertcoffey@sba.gov">robertcoffey@sba.gov</a>	502-582-5971
<b>LaVoz de Kentucky</b>	Andres Cruz	<a href="mailto:lavozdeky@yahoo.com">lavozdeky@yahoo.com</a>	859-621-2106
<b>The Key News Journal</b>	Patrice Muhammad	<a href="mailto:paatricem@keynewsjournal.com">paatricem@keynewsjournal.com</a>	859-373-9428



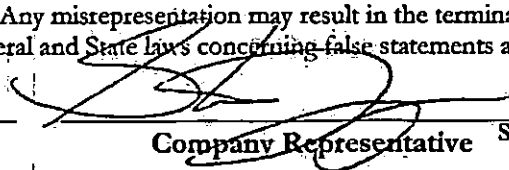
**LFUCG MWDBE PARTICIPATION FORM**  
 Bid/RFP/Quote Reference # 130-2018

The MWDBE and/or Veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. Failure to submit a completed form may cause rejection of the bid.

MWDBE Company, Name, Address, Phone, Email	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1. TEMERICK LOUISVILLE, KY	ELECTRICAL	\$28,800	1.8%
2. MCKENNEY PAINESVILLE VERSARLES, KY	PAINTING	\$109,900	6.8%
3.			
4.			

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Judy Construction Company  
 Company

  
 Company Representative Steve Judy

October 19, 2018  
 Date

President  
 Title

\*TO BE COMPLETED - IF SUBSTITUTES OCCUR\*



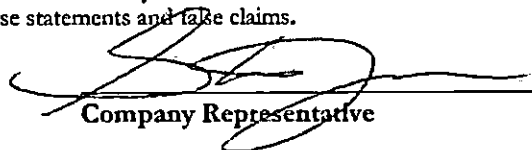
**LFUCG MWDBE SUBSTITUTION FORM**  
 Bid/RFP/Quote Reference # 130-2018

The substituted MWDBE and/or Veteran subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Central Purchasing for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project.

SUBSTITUTED MWDBE Company Name, Address, Phone, Email	MWDBE Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1.					
2.					
3.					
4.					

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Judy Construction Company  
 Company  
October 19, 2018  
 Date

  
 Company Representative Steve Judy  
 President  
 Title

\*TO BE COMPLETED UPON AWARD\*



**MWD BE QUOTE SUMMARY FORM**

Bid/RFP/Quote Reference # 130-2018

The undersigned acknowledges that the minority and/or veteran subcontractors listed on this form did submit a quote to participate on this project. Failure to submit a completed form may cause rejection of the bid.

Company Name <b>Judy Construction Company</b>	Contact Person <b>Steve Judy</b>
Address/Phone/Email sjudy@judyconstructionco.com 103 South Church Street Cynthiana, KY 41031	Bid Package / Bid Date <b>LFUCG-WH WWTP Final Clarifiers # 7 &amp; # 8 Structural Repairs</b>  <b>10/19/2018</b>

MWD BE Company Address	Contact Person	Contact Information (work phone, Email, cell)	Date Contacted	Services to be performed	Method of Communication (email, phone meeting, ad, event etc)	Total dollars \$\$ Do Not Leave Blank (Attach Documentation)	MBE * AA HA AS NA Female	Veteran

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Judy Construction Company  
Company

Steve Judy  
Company Representative

October 19, 2018  
Date

President  
Title

\*TO BE COMPLETED UPON AWARD\*



**LFUCG SUBCONTRACTOR MONTHLY PAYMENT REPORT**

The LFUCG has a 10% goal plan adopted by city council to increase the participation of minority and women owned businesses in the procurement process. The LFUCG also has a 3% goal plan adopted by cited council to increase the participation of veteran owned businesses in the procurement process. In order to measure that goal LFUCG will track spending with MWDBE and Veteran vendors on a monthly basis. By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentation may result in termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims. Please submit this form monthly to the Division of Central Purchasing/ 200 East Main Street / Room 338 / Lexington, KY 40507.

Bid/RFP/Quote # 130-2018

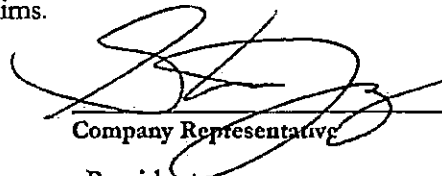
Total Contract Amount Awarded to Prime Contractor for this Project \_\_\_\_\_

Project Name/ Contract # LFUCG-WH WWTP Final Clarifiers # 7 & # 8 Structural Repairs	Work Period/ From: _____ To: _____
Company Name: Judy Construction Company	Address: 103 South Church Street, Cynthiana, KY 41031
Federal Tax ID: 61-0861333	Contact Person: Steve Judy

Subcontractor Vendor ID (name, address, phone, email)	Description of Work	Total Subcontract Amount	% of Total Contract Awarded to Prime for this Project	Total Amount Paid for this Period	Purchase Order number for subcontractor work (please attach PO)	Scheduled Project Start Date	Scheduled Project End Date

By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

Judy Construction Company  
Company  
October 19, 2018  
Date

  
\_\_\_\_\_  
Company Representative Steve Judy  
\_\_\_\_\_  
President  
Title

**LFUCG STATEMENT OF GOOD FAITH EFFORTS**

Bid/RFP/Quote # 130-2018

By the signature below of an authorized company representative, we certify that we have utilized the following Good Faith Efforts to obtain the maximum participation by MWDBE and Veteran-Owned business enterprises on the project and can supply the appropriate documentation.

Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

Included documentation of advertising in the above publications with the bidders good faith efforts package

Attended LFUCG Central Purchasing Economic Inclusion Outreach event

Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities

Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses

Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

Contacted organizations that work with MWDBE companies for assistance in finding certified MWDBE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.

Provided the interested MWDBE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items



into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

X Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

X Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

\_\_\_\_\_ Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

X Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

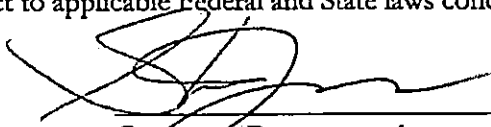
X Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

\_\_\_\_\_ Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

**NOTE:** Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to approval by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Judy Construction Company  
Company  
October 19, 2018  
Date

  
\_\_\_\_\_  
Company Representative  
President  
Steve Judy  
Title

**8. AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND CONFLICT OF INTEREST**

I hereby swear (or affirm) under the penalty for false swearing:

1. That I am the Bidder (if the Bidder is an individual), a partner of the Bidder (if the Bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the Bidder is a corporation);
2. That the attached Bid has been arrived at by the Bidder independently, and has been submitted without collusion with, and without any agreement, understanding or planned common course of action, with any other contractor, vendor of materials, supplies, equipment or services described in the Invitation to Bid, designed to limit independent bidding or competition;
3. That the contents of the Bid or Bids have not been communicated by the Bidder or its employees or agents to any person not an employee or agent of the Bidder or its surety on any bond furnished, with the Bid or Bids, and will not be communicated to any such person, prior to the official opening of the Bid or Bids;
4. That the Bidder is legally entitled to enter into the contracts with the Lexington-Fayette Urban County Government, and is not in violation of any prohibited conflict of interest;
5. (Applicable to corporation only) That as a foreign corporation, we are registered with the Secretary of State, Commonwealth of Kentucky, and authorized to do business in the State \_\_\_\_\_ or, that as a domestic corporation, we are in good standing with the Secretary of State, Commonwealth of Kentucky X. Check the statement applicable.
6. This offer is for 60 calendar days from the date this Bid is opened. In submitting the above, it is expressly agreed that, upon proper acceptance by the Lexington-Fayette Urban County Government of any or all items bid above, a Contract shall thereby be created with respect to the items accepted.
7. That I have fully informed myself regarding the accuracy of the statements made in this statement.
8. That I certify that Subcontractors have not and will not be awarded to any firm(s) that have been debarred from noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

9. STATEMENT OF EXPERIENCE

NAME OF INDIVIDUAL: \_\_\_\_\_

POSITION/TITLE: \_\_\_\_\_

STATEMENT OF EXPERIENCE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NAME OF INDIVIDUAL: \_\_\_\_\_

POSITION/TITLE: \_\_\_\_\_

STATEMENT OF EXPERIENCE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NAME OF INDIVIDUAL: \_\_\_\_\_

POSITION/TITLE: \_\_\_\_\_

STATEMENT OF EXPERIENCE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NAME OF INDIVIDUAL: \_\_\_\_\_

POSITION/TITLE: \_\_\_\_\_

STATEMENT OF EXPERIENCE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NAME OF INDIVIDUAL: \_\_\_\_\_

POSITION/TITLE: \_\_\_\_\_

STATEMENT OF EXPERIENCE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NAME OF INDIVIDUAL: \_\_\_\_\_

POSITION/TITLE: \_\_\_\_\_

STATEMENT OF EXPERIENCE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\* Include all officers, office management's, Affirmative Action officials, and field management personnel. (Attach separate sheets if necessary.)

10. EQUAL OPPORTUNITY AGREEMENT

The Law

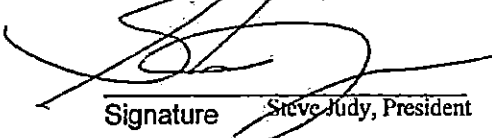
- \* Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.
- \* Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and subcontractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.
- \* Section 503 of the Rehabilitation Act of 1973 States:  
*The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.*
- \* Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal Contracts.
- \* Section 206 (A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:  
*The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.*

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors, and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractor may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped, and aged persons.

  
Signature Steve Judy, President

Judy Construction Company  
Name of Business

The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

The Kentucky equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any count, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- (1) *The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;*
- (2) *The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;*
- (3) *The contract will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and*
- (4) *The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.*

The Act further provides:

**KRS 45.610. Hiring minorities – Information required**

- (1) *For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.*
- (2) *Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.*

**KRS 45.620. Action against contractor – Hiring of minority contractor or subcontractor**

- (1) *If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.*

- (2) *If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 – 45.640.*
- (3) *The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.*

KRS 45.630 Termination of existing employee not required, when

*Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.*

KRS 45.640 Minimum skills

*Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.*

It is recommended that all of the provisions quoted above to be included as special conditions in each contract. In the case of a contract exceeding \$250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

**11. EQUAL EMPLOYMENT OPPORTUNITY AFFIRMATIVE ACTION POLICY**

It is the policy of Indy Construction Company  
to assure that all applicants for employment and all employees are treated on a fair and equitable basis without regard to their race, religion, sex, color, handicap, natural origin or age.

Such action shall include employment, promotion, demotion, recruitment or recruitment advertising, layoff or termination, rates of pay and other forms of compensation, and selection for training, whether apprenticeship and/or on-the-job-training.

Furthermore, this company agrees to make special recruitment efforts to hire the protected class whenever feasible. This company also agrees to adhere to all applicable federal, state, and local laws relating to Equal Employment Opportunity for all individuals.



12. **WORKFORCE ANALYSIS FORM**

Name of Organization: Judy Construction Company

Week Ending Date: 10/16/2018

Categories	Total	White		Latino		African American		Native Hawaiian		Asian		American Indian		Two or More Races		Totals	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators	4	3	1													3	1
Professionals	10	9					1									9	1
Superintendents	15	15														15	0
Supervisors	0															0	0
Foremen	4	4														4	0
Technicians	0															0	0
Protective Services	0															0	0
Para-Professionals	0															0	0
Office/Clerical	4		4													0	4
Skilled Craft	117	85	1	30	1											115	2
Service/Maintenance	4	4														4	0
<b>Total</b>	<b>158</b>	<b>120</b>	<b>6</b>	<b>30</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>150</b>	<b>8</b>

Prepared by: James K. Cowley, EEO Officer Date: 10/16/18

50029-008: 8/8/2018

**13. EVIDENCE OF INSURABILITY**

**LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT CONSTRUCTION PROJECT**  
 (Use separate form for each Agency or Brokerage agreeing to provide coverage)

Names Insured: Judy Construction Company

Employee ID: 61-0861333

Address: 103 South Church Street, Cynthiana, KY 41031

Phone: 859-234-6900

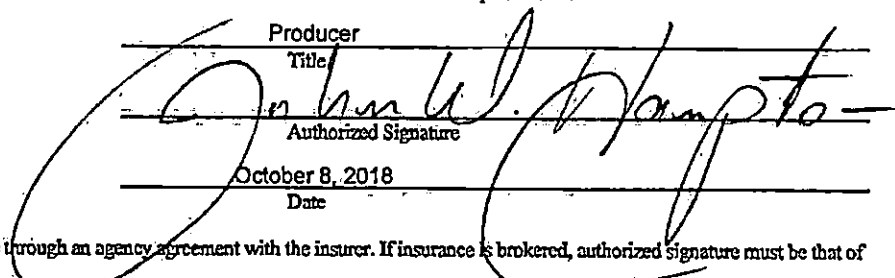
Project to be insured: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs Bid No. 130-2018

In lieu of obtaining certificates of insurance at this time, the undersigned agrees to provide the above Named Insured with the minimum coverage listed below. These are outlined in the Insurance and Risk Management of Part V (Special Conditions), including all requirements, and conditions:

Section Items	Coverage	Minimum Limits and Policy Requirements	Limits Provided To Insured	Name of Insurer	A.M. Best's	
					Code	Rating
SC-3, Section 2, Part 4.1 – see provisions	CGL	\$1,000,000 per occ. And \$2,000,000 aggregate	\$1,000,000 Occ \$2,000,000 Agg	Travelers	A++	XV
SC-3, Section 2, Part 4.1 – see provisions	AUTO	\$2,000,000/per occ.	\$1,000,000 CSL *	Travelers	A++	XV
SC-3, Section 2, Part 4.1 – see provisions	WC	Statutory w/endorsement as noted	\$4,000,000	KY AGC	A-	VII
	*Umbrella		\$1,000,000	Travelers	A++	XV

Section 2 includes required provisions, statements regarding insurance requirements, and the undersigned agrees to abide by all provisions for the coverage's checked above unless stated otherwise when submitting.

GCH Insurance Group  
 Agency or Brokerage  
780 Winchester Road  
 Street Address  
Lexington KY 40505  
 City State Zip  
859-254-1836  
 Telephone Number

John W. Hampton  
 Name of Authorized Representative  
 Producer  
 Title  
  
 Authorized Signature  
October 8, 2018  
 Date

NOTE: Authorized signatures may be the agent's if agent has placed insurance through an agency agreement with the insurer. If insurance is brokered, authorized signature must be that of authorized representative of insurer.

**IMPORTANT: Contract may not be awarded if a completed and signed copy of this form for all coverage's listed above is not provided with the Bid.**

14. DEBARRED FIRMS

PROJECT NAME: West Hickman WWTP Final Clarifiers No. 7 & No. 8 Structural Repairs

BID NUMBER: 130-2018

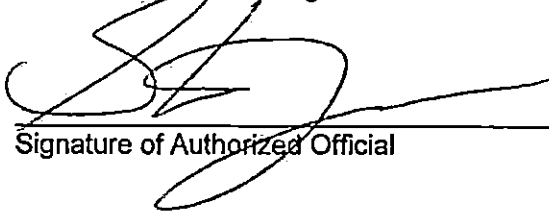
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT  
LEXINGTON, KY

All prime Contractors shall certify that Subcontractors have not and will not be awarded to any firms that has been debarred for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

All Bidders shall complete the attached certification in duplicate and submit both copies to the Owner with the Bid. The Owner (grantee) shall transmit one copy to the Lexington-Fayette Urban County Government, Division of Community Development, within fourteen (14) days after bid opening.

The undersigned hereby certifies that the firm of Judy Construction Company has not and will not award a subcontract, in connection with any Contract award to it as the result of this Bid, to any firm that has been debarred for noncompliance with the Federal labor Standards, Title VI of the civil Rights Act of 1964, Executive Order 11246 as amended or any Federal Law.

Judy Construction Company  
Name of Firm Submitting Bid

  
Signature of Authorized Official Steve Judy

President  
Title

October 19, 2018  
Date

**15. DEBARMENT CERTIFICATION**

All contractors/subcontractors shall complete the following certification and submit it with the Bid.

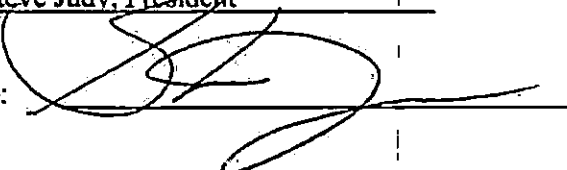
The contractor/subcontractor certifies in accordance with Executive Order 12549 (Debarment and Suspension 2/18/86) that to the best of its knowledge and belief, that it and its principals:

- 1) Are not presently debarred, suspended, proposed for debarment, declared negligible, or voluntarily excluded from covered transactions or contract by any Federal department or agency for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 as amended, Executive Order 11246 as amended or any other Federal law,
  - a) Have not within a three year period preceding this Bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - b) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(a) of this certification; and
  - c) Have not within a three-year period preceding this Bid has one or more public (Federal, State or local) transactions or contracts terminated for cause or default.
- 2) Where the Contractor is unable to certify to any of the statements in this certification, such prospective contractors shall attach an explanation to this certification form.

Firm Name: Judy Construction Company

Project: LFUCG-WH WWTP Final Clarifiers # 7 & # 8 Structural Repairs

Printed Name and Title of Authorized Representative:  
Steve Judy, President

Signature: 

Date: October 19, 2018

END OF SECTION

**PART VIII**

**ADDENDA**

**WH WWTP FINAL CLARIFIERS NO. 7 & NO. 8 STRUCTURAL REPAIRS**

All addenda issued during the bidding of the Project will be reproduced in the signed Contract Documents, on the pages following this heading sheet.

<u>Addendum Number</u>	<u>Title</u>	<u>Date</u>
1.	ADDENDUM #1 <u>West Hickman WWTP Final Clarifiers # 7 &amp; # 8 Structural Repairs</u>	<u>October 3, 2018</u>
2.	ADDENDUM No. 2 <u>West Hickman WWTP Final Clarifiers # 7 &amp; # 8 Structural Repairs</u>	<u>October 5, 2018</u>
3.	ADDENDUM No. 3 <u>West Hickman WWTP Final Clarifiers # 7 &amp; # 8 Structural Repairs</u>	<u>October 12, 2018</u>
4.	_____	_____
5.	_____	_____

MAYOR JIM GRAY



**LEXINGTON**

CHARLES MARTIN  
DIRECTOR  
WATER QUALITY

**ADDENDUM #1**

Bid Number: #130-2018

Date: October 3, 2018

Subject: West Hickman WWTP Final Clarifiers #7 & #8 Structural Repairs

Inquiries to:  
Brian Marcum  
[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)  
(859) 258-3325

**TO ALL PROSPECTIVE SUBMITTERS:**

Please be advised of the following clarification to the above referenced Bid:

The email address in the specification book for questions is incorrect, the correct email address for questions is:

[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)

Todd Slatin, Director  
Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged.  
This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: Judy Construction Company

ADDRESS: 103 South Church Street, Cynthiana, KY 41031

SIGNATURE OF BIDDER:  \_\_\_\_\_  
Steve Judy, President

MAYOR JIM GRAY



LEXINGTON

CHARLES MARTIN  
DIRECTOR  
WATER QUALITY

**ADDENDUM No. 2**

Bid Number: **#130-2018**

Date: October 5, 2018

Subject: West Hickman WWTP Clarifiers No. 7 & No. 8  
Structural Repairs

Address inquiries to:  
Brian Marcum  
[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)  
(859) 258-3325

**TO ALL PROSPECTIVE SUBMITTERS:**

Please be advised of the following clarifications to the above referenced Bid:

1. See the Prebid Meeting Minutes and Sign-In Sheet attached to this Addendum.

Questions from the Prebid Meeting will be responded to in a future Addendum.

2. The following Bid dates associated with the project have been revised:

- Last day for questions – Wednesday, October 10, 2018
  - Questions should be emailed to Brian Marcum at [brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)
- Final Addendum Issued – Friday, October 12, 2018
- Bid Opening – Friday, October 19, 2018, at 2:00pm (LFUCG Division of Purchasing)

A revised Specification Section Part III, Form of Proposal will be issued in a future Addendum for use in submitting a bid.

Todd Slatin, Director  
Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged.  
This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: Judy Construction Company

ADDRESS: 103 South Church Street, Cynthiana, KY 41031

SIGNATURE OF BIDDER: 

Steve Judy, President



# Hazen *Pre-bid Meeting Minutes*



October 2, 2018

Location: WH WWTP, 645 West Hickman Plant Road, Nicholasville, KY 40356

Time: 2:00pm EST

Attendees: See Sign-In Sheet

Subject: WH WWTP Clarifier No. 7 & No. 8 Stuc Repairs, Bid #130-2018 – Pre-bid Meeting

## 1. Introductions

- Owner: LFUCG DWQ
  - Ben Clements, PE, Project Manager
  - Tiffany Rank, PE, Plant Engineer Manager
  - Jim Worten, WH WWTP Superintendent
- Owner: LFUCG Division of Purchasing
  - Brian Marcum, [brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)
  - Sherita Miller, [smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov)
- Engineer: Hazen and Sawyer
  - Kurt Zehnder, PE, Project Manager

## 2. Project Description

The West Hickman WWTP Clarifiers No. 7 & No. 8 Structural Repair project includes:

- Removal, reinstallation of the existing final clarifier mechanisms and bridges in Final Clarifiers No. 7 & No. 8, and all associated piping, painting and electrical appurtenances included and shown on the Contract Documents.
- Removal and replacement of new sluice gates at existing Final Clarifier Flow Splitter Box No. 1 & No. 2 and all associated appurtenances.
- Removal of 8" concrete slab and swept-in grout layer in existing Final Clarifiers No. 7 & No. 8.
- Cutting off of existing rock anchors in existing Final Clarifiers No. 7 & No. 8.
- Installation of new rock anchors, concrete base slab and swept-in grout in existing Final Clarifiers No. 7 & No. 8.

## 3. Bid/Construction Schedule

- September 25, 2018: Advertisement
- October 2, 2018: Pre-bid Meeting
- October 5, 2018: Last Day for Questions
- October 9, 2018: Final Addendum Issued
- October 16, 2018: Bid Opening, 2:00 pm at Division of Purchasing (downtown Lexington)
- October 22, 2018: Bid Recommendations
- November 1, 2018 & November 15, 2018: Council Meetings

Job no



- November 15, 2018: Bid Awarded / Notice of Award
- November 27, 2018: Notice to Proceed (Tentative)
- November 27, 2018: Preconstruction Meeting (Tentative)
- December 3, 2018: Contract Time Starts / Notice to Proceed (Tentative)
- August 30, 2019: Substantial Completion (10-month contract; see the two substantial completion dates listed in the Agreement).

#### 4. Bidding Questions Procedures

- All bidding questions are to be submitted in writing and addressed to the Division of Purchasing, Brian Marcum [brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov), who in turn will have an addendum issued for the LFUCG.
- Pre-bid meeting Questions:
  - Questions may be asked verbally. Questions will be recorded and issued as part of an addendum.
  - Verbally asked questions may be verbally responded to by the Owner/Engineer at the meeting, and responses recorded in the addendum.
  - Responses from Owner/Engineer at pre-bid meeting may change after we have had a chance to get back to the office and research/clarify information.
- Final written responses in addendums will override any verbal question responses.
- Final issued addendums will be the legal response of record.
- Complete the Risk Assessment (including listing LFUCG as a co-insurer) and turn it in with the submitted bid.
- Addenda will be issued via Lynn Imaging.

#### 5. MWDBE

- The successful Bidder must submit with their bid the following items:
  - Affirmative Action Plan of the firm
  - Current Work Force Analysis Form
  - Good Faith Effort Documentation to meet the MWDBE goals.
  - List of Disadvantaged Business Enterprise Subcontractors and the Dollar Value of each Subcontract
- It is requested that each Bidder include in its bid a goal of (10%) for MWDBE participation and a goal of (3%) for Veteran participation.
- Contact Sherita Miller, [smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov), or Brian Marcum, Division of Central Purchasing for additional information. Contractors can also submit questions through Ionwave.

#### 6. Wage Rates

- State and Federal Wage rates are not required as part of this project.

#### 7. Bid Form

- The bid form contains a lump sum project bid and an Allowance needs to be included in the Contractor's total bid price.

**8. Completed Permits Prior to Construction**

- Any electrical permits required are the responsibility of the Contractor.
- KY DOW notification of the project start of construction.
- In general, Hazen nor LFUCG-DWQ is expecting any permits to be obtained on this project.

**9. Site Access**

The construction, maintenance, removal, and restoration of construction entrances are incidental to the contract and are not a Pay Item.

- The Contractor shall contact Jim Worten prior to mobilizing.
- The Contractor shall keep the plant access roads open at all times.

**10. Site Visit**

- Bidders are encouraged to visit the site immediately following this Pre-bid Meeting. Hazen will be available for any additional questions.

**11. Questions and Comments**

- See the Question and Answer log included in a following Addendum.

**SIGN-IN SHEET**  
**Pre-Bid Meeting 130-2018 West Hickman WWTP Final Clarifiers #7 & 8 Repairs**  
**October 2, 2018 @ 2:00 PM**

Representative	Company Name	DBE/MBE/WBE/ Veteran	Phone#	Email Address
Brian Marcum	LFUCG		859-258-3320	brianm@lexingtonky.gov
Sherita Miller	LFUCG		859-258-3323	smiller@lexingtonky.gov
Kurt Zehnder	HAZEN and SAWYER	NO	859.286.1265	kzehnder@HAZENandSAWYER.com
DARRINE HUTCHINSON	FAB TEL	NO	816-560-2595	DARRINEH@THEJANIEGROUP.COM
Tom Wood	Pace Contracting LLC	NO	502-815-4149	tomwood@pacecontractingllc.com
Jim Worten	LFUCG - West Hickman		859-280-8650	JWORTEN@lexingtonky.gov
TOM CLARK	TEM GROUP, INC	MBE	502-454-0101	tclark@temgroupinc.com
DARRYL WELLS	JUDY CONST. CO.	NO	859-221-4301	DWELLS@JUDYCONSTRUCTIONCO.COM
Tiffany Rank	LFUCG - DW @		859-425-2406	tiffanyr@lexingtonky.gov
Ben Clements	LFUCG - DW @	MBE	502-275-9587	bencl@lexingtonky.gov

MAYOR JIM GRAY



LEXINGTON

CHARLES MARTIN  
DIRECTOR  
WATER QUALITY

**ADDENDUM No. 3**

Bid Number: **#130-2018**

Date: October 12, 2018

Subject: West Hickman WWTP Clarifiers No. 7 & No. 8  
Structural Repairs

Address inquiries to:  
Brian Marcum  
[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)  
(859) 258-3325

**TO ALL PROSPECTIVE SUBMITTERS:**

Please be advised of the following clarifications to the above referenced Bid:

	<b>Questions</b>	<b>Answers</b>
1.	We are requesting additional contract days to complete the Clarifier 7 & 8 work. See the attached reason the additional time requested. <i>(additional question attachments not included in addendum.)</i>	The contract length will be extended 65 calendar days. See the revised Substantial and Final Completion Days listed in the Specifications Clarifications listed below.
2.	The scope of work in the Walker Process Clarifier quote, does not indicate that we are to remove and ship the clarifier drives back to Walker process for rehabilitation. Please further clarify this work.	The Contractor will be responsible for removing all clarifier equipment from the existing clarifier structure. The Contractor will not be shipping the clarifier drives back to Walker. All work associated with the clarifier (and clarifier drives) will be completed by the Contractor at the WH WWTP site or at a site selected by the Contractor. Walker will provide technical support and documentation on the repairs to the Contractor.
3.	Is sales tax included in the Walker allowance price in specs.	No. The Contractor shall include the sales tax of the Walker clarifier repairs in their base bid.
4.	Are we going to be required to test the existing clarifier concrete tanks for watertightness per spec section 01470. Where will the test water come from. This is normally done for new tanks only.	Leak testing of Final Clarifier Nos. 7 and 8 is required. Owner will provide non-potable source water for leak testing. Contractor shall provide all labor, pumping and hoses required for the leak testing.





5.	Who pays the testing company that tests concrete cylinders and other materials.	As stated in different parts of specifications 02216, 03300-1.05 and 03600, the Contractor pays for materials testing. The Contractor's testing firm shall be a submittal to the project and approved by the Engineer and Owner prior to testing. See additional clarifications below.
6.	Do we have to test the swept in grout for strength before we can start up the Clarifier. If so – this will mean the grout will have to sit for 28 days. This is normally not required. This will also further delay the ability to complete the clarifier work in the time allotted in the new contract currently.	Clarifier start up is not tied to grout strength test results. Assuming no other constraints, grout need only meet the minimum cure time before start up can begin.
7.	Do we paint the concrete walls inside the clarifiers. Paint spec says we do.	No. Concrete walls will not be painted.
8.	Do we paint the existing sluice gate stem guides and operators.	No.
9.	Can you give us a specific paint schedule for this project – as the spec section 09900 is all inclusive.	Specification Section 09900 is intended to cover painting requirements for the clarifier equipment and bridges. Specific clarifier paint requirements are stated in Notes 3 and 4 Drawing S401 and Notes 3 and 4 Drawing S403.
10.	The Walker Process Equipment Proposal (included in Section 11461) states, on Page 2, their offer is subject to their receipt of a purchase order on or before October 20, 2018. Please confirm the Walker Process equipment Proposal will remain valid until such time the successful Bidder has been awarded the project, has executed a Contract with the Owner, and has been allowed sufficient time to provide a Purchase Order to Walker.	Yes, confirmed with J. Dwight Thompson Co. that Walker Process Equipment will hold their price until December 31, 2018.





11.	On Drawing Number S404, Note 3 describes anticipated elevations of the top of rock in various areas of the clarifiers. This information does not appear to be in agreement with Note 7 on Drawing Number S406. Please explain how these two sets of conditions are to be addressed by the Contractor.	Note 3 on Drawing S404 is provided for purposes of estimating rock anchor length and written such that assumed top of rock is at a lower elevation. Note 7 on Drawing S406 is providing for purposes of estimating rock to be removed and written such that assumed top of rock is at a higher elevation. See additional clarification listed below in the Drawing Clarifications.
12.	On Page 4 of the Walker Process Equipment Proposal, the "Estimated Schedule" indicates shop drawing submittal will be 5 to 6 weeks after receipt of a Purchase Order, and equipment shipment will be 10 to 12 weeks after their receipt of approved drawings. Allowing 2 weeks for the Engineer's approval of the shop drawings, the duration of these activities will require 17 to 20 weeks total. This is not possible within the time allowed for completion of the clarifier repairs. Please review these issues and adjust the contract time to provide suitable time.	The contract length will be extended 65 calendar days. See the revised Substantial and Final Completion Days listed in the Specifications Clarifications listed below.
13.	In the Specifications, the Geotechnical Report (prepared by Geotechnology Inc.) includes a Boring Plan which depicts Borings B-4, B-5, B-8, and B-9. These borings were performed by FMSM in 1999. Is the 1999 Geotechnical Report available to bidders (or at least the Boring Logs of these 4 borings)?	Yes, see the attached 1999 FMSM boring logs included in this addendum.





14.	On Drawing Number S404, Detail 3 (Typical Rock Anchor), depicts the use of steel casing pipe, as required. Will PVC casing pipe be deemed an acceptable alternate to steel?	The casing shall be steel.
15.	As depicted in the Rock Anchor Plan drawings for both clarifiers, a few of the anchor locations appear to be too close to existing structure elements to allow proper placement of drilling equipment. Will minor adjustments (inches) in the location of anchor locations be permitted to provide proper working room?	Yes, the Engineer will work with Contractor to adjust rock anchor locations near the demolition cuts. For example, FC7 anchors RA-14, RA-75 and RA-82 can be shifted inward if necessary.

## 1. DRAWING CLARIFICATIONS

- A. Drawing S403, Demolition Top Plan, dimension in lower left quadrant, change "SEE NOTE 13" to "SEE NOTE 11".
- B. Drawing S01, Note G-16, add the following after last sentence: "EXISTING BACKFILL DOES NOT NEED TO BE REMOVED PRIOR TO LEAK TESTING. FINAL CLARIFIER NOS. 7 AND 8 SHALL BE LEAK TESTED IN ACCORDANCE WITH SPECIFICATION SECTION 01470."
- C. Drawing S404, Note 3, add the following to the beginning of third sentence; "FOR PURPOSES OF ESTIMATING ROCK ANCHOR LENGTH, TOP OF ROCK IS.....".
- D. Drawing S406, Note 7, add the following to the beginning of the note; "FOR PURPOSES OF ESTIMATING ROCK REMOVAL, CONTRACTOR SHALL.....".

## 2. SPECIFICATION CLARIFICATIONS

- A. Part III, Form of Proposal Included in the original Bidding Documents is acceptable and shall be used when submitted a bid.





**2. SPECIFICATION CLARIFICATIONS (cont.)**

- B. Part VI, Contract Agreement, Part 2, the following Substantial and Final Completion calendar days noted in this section shall be revised as noted below.

Substantial Completion 1: Final Clarifiers No. 7 & No. 8 work  
Days: 240 calendar days; Date: \_\_\_\_\_, 2019

Substantial Completion 2: Flow Splitter Boxes No. 1 & No. 2 work  
Days: 330 calendar days; Date: \_\_\_\_\_, 2019

Final Completion of Project  
Days 365 calendar days; Date: \_\_\_\_\_, 2019

- C. Specification Section 01470-1.01-D; delete first sentence and replace with "Final Clarifier Nos. 7 and 8 shall be tested for leakage by the Contractor."
- D. Specification Section 03300-1.05-C, first sentence, change "Article 3.10" to "Article 3.09".
- E. Specification Section 03300-1.05-C; first sentence, change "employed by the Contractor" to "employed and paid for by the Contractor".
- F. Specification Section 03300-1.05-C, second sentence, change "However, the Contractor shall be charged..." to "The Contractor will also be charged...".
- G. Specification Section 03600-1.05-A.1, last sentence, change "Engineer" to "Contractor".
- H. Specification Section 09900, Table 9-1, PAINTING SCHEDULE, delete "Concrete and Masonry" line items in entirety.
- I. Specification Section 09900, Table 9-1, PAINTING SCHEDULE, delete "Other" line items in entirety.
- J. See the attached 1999 FMSM boring logs attached to this Addendum.

Todd Slatin, Director  
Division of Central Purchasing





MAYOR JIM GRAY



**LEXINGTON**

CHARLES MARTIN  
DIRECTOR  
WATER QUALITY

All other terms and conditions of the Bid and specifications are unchanged.  
This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: Judy Construction Company

ADDRESS: 103 South Church Street, Cynthiana, KY 41031

SIGNATURE OF BIDDER: 

Steve Judy, President







P.O. BOX 457      CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900      Fax (859) 234-3480  
www.judyconstructionco.com

## AFFIRMATIVE ACTION PROGRAM

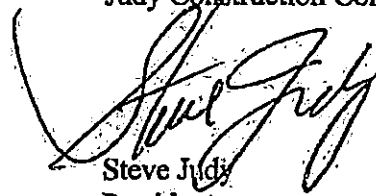
**Judy Construction Company hereby adopts the following affirmative action program and agrees to its immediate implementation:**

- Maintain a working environment free of harassment, intimidation, and coercion at all work sites and all facilities where our employees are assigned.
- Keep current listing of minority and female recruitment sources. When employment opportunities arise, provide written notification to these sources and other community organizations and maintain a record of the organizations' responses.
- Maintain current listing, including name, addresses and telephone numbers, of all minority and female applicants and what action was taken in regard to each individual.
- Immediately contact appropriate state and federal agencies if we believe any recruitment source has impeded our efforts to meet our minority and female obligations.
- Provide on-the-job apprenticeship training programs, approved by the U.S. Department of Labor, for minority and female employees that can lead to their advancement.
- Maintain a written Equal Employment Opportunity policy and conspicuously post Equal Employment Opportunity policy on all jobsite bulletin boards.
- Conduct an annual meeting with all supervisory employees to review Equal Employment Opportunity policy and affirmative action commitments.
- Include in all advertisements for employment the statement that we are an "Equal Opportunity Employer". Notify all subcontractors with whom we are working of our EEO commitment.
- Direct recruitment efforts to minority, female and community organizations, to schools with large minority and female enrollment and to minority and female recruitment and training organizations serving our area and employment needs.
- Encourage all employees to recruit any competent minority and female applicants with whom they are acquainted.
- Validate all selection requirements for advancement to ensure that they do not create adverse impact against minorities and females.



- Prepare, at least annually, an inventory and evaluation of all minority and female employees for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, such opportunities.
- Confirm that seniority practices, job classifications, work assignments and all other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that our EEO policy and affirmative action objectives are being carried out.
- Ensure all facilities and company activities shall be nonsegregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between sexes.
- Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including distributions of solicitations to minority and female contractor associations and other business associations.
- Conduct an annual review, of all supervisory personnel adherence to our EEO policy and affirmative action obligations.

Judy Construction Company

A handwritten signature in black ink, appearing to read "Steve Judy", is written over the typed name and title.

Steve Judy  
President

**ANNUAL MEETING OF BOARD OF DIRECTORS  
JULY 12, 2018**

The annual meeting of the Directors of the corporation was called to order by Steve Judy, President at Cynthiana, Kentucky at 9:30 AM. Steve Judy and James K. Cowley, Directors of the corporation were present in person and consented to the transaction of any and all business to come before the meeting.

The minutes of the last special meeting of the Board of Directors were read and approved.

On motion duly made and seconded, it was unanimously ordered and

RESOLVED, that the following officers were elected to the offices set opposite their names to serve for a term of one year or until their successors are elected and qualified:

Steve Judy	-	President
Ben Williams	-	Vice President
James K. Cowley	-	Secretary/Treasurer

On motion duly made and seconded, it was unanimously ordered and

RESOLVED, that for the corporation's fiscal year ending March 31, 2019, the President, Steve Judy's salary was approved. This salary will be paid if the funds become available.

On motion duly made and seconded, it was unanimously ordered and

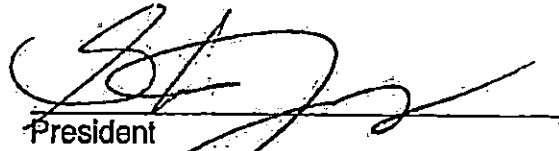
RESOLVED, that Steve Judy, Ben Williams and/or James K. Cowley is hereby authorized to sign any and all contracts, agreements, options, leases, deeds, mortgages, bills of sale and any and all other legal documents to bind Judy Construction Company.

On motion duly made and seconded, it was unanimously ordered and


RESOLVED, that Fifth Third Bank, Cincinnati, OH, is authorized to pay any check drawn on the Bank by the Corporation when same is signed by Steve Judy. James K. Cowley and Ben Williams are authorized to sign any check in an amount less than \$500,000.00. If Steve Judy is temporarily unavailable, any check in excess of \$500,000.00 will require signatures from both James K. Cowley and Ben Williams. That the authority vested by this Resolution shall continue until written notice shall be given to and acknowledged by an officer of Fifth Third Bank, Cincinnati, Ohio, setting forth any change with respect thereto.

On motion duly made and seconded, it was unanimously ordered and

There being no further business to come before the meeting, on motion duly made and seconded, the annual meeting of the Board of Directors was unanimously adjourned.



President



Secretary

Judy Construction Company  
103 South Church Street  
P.O. Box 457  
Cynthiana, KY 41031

State of Incorporation: Kentucky

Commonwealth of Kentucky  
Trey Grayson, Secretary of State

4/9/2009

Division of Corporations  
Business Filings

P. O. Box 718  
Frankfort, KY 40602  
(502) 564-2848  
<http://www.sos.ky.gov>

Certificate of Existence

Authentication Number: 78947

Jurisdiction: Judy Construction Company

Visit <http://apps.sos.ky.gov/business/obdb/certvalidate.aspx> to authenticate this certificate.

I, Trey Grayson, Secretary of State of the Commonwealth of Kentucky, do hereby certify that according to the records in the Office of the Secretary of State,

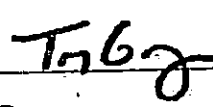
JUDY CONSTRUCTION COMPANY

is a corporation duly incorporated and existing under KRS Chapter 271B, whose date of incorporation is April 9, 1974 and whose period of duration is perpetual.

I further certify that all fees and penalties owed to the Secretary of State have been paid; that articles of dissolution have not been filed; and that the most recent annual report required by KRS 271B, 16-220 has been delivered to the Secretary of State.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 9th day of April, 2009.



  
Trey Grayson  
Secretary of State  
Commonwealth of Kentucky  
78947/0114048

# Commonwealth of Kentucky

OFFICE OF  
SECRETARY OF STATE

DREXELL R. DAVIS  
Secretary



FRANKFORT,  
KENTUCKY

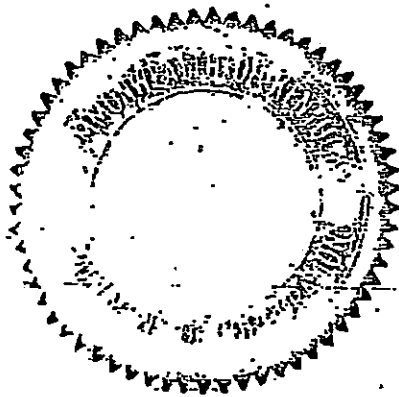
## CERTIFICATE OF AMENDMENT TO ARTICLES OF INCORPORATION

I, DREXELL R. DAVIS, Secretary of State of the Commonwealth of Kentucky, do hereby certify that Amended Articles of Incorporation of

MARTIN & JUDY, INC. Changing Name To

JUDY CONSTRUCTION COMPANY

amended pursuant to Kentucky Revised Statutes, 271A, (228) duly signed and verified or acknowledged according to law, have been filed in my office by said corporation, and that all taxes, fees and charges payable upon the filing of said Articles of Amendment have been paid.



SECRETARY OF STATE

Given under my hand and seal of Office as Secretary of State, at Frankfort, Kentucky, this 6TH day of DECEMBER, 1978

*Drexell R. Davis*

SECRETARY OF STATE

ASSISTANT SECRETARY OF STATE



JUDY CONSTRUCTION COMPANY

Equipment List  
September 30, 2018

JCC #	DESCRIPTION	MODEL YEAR	MODEL NO.	SERIAL NO.	INS VALUE
<u>CRANES</u>					
CR-3	LINK BELT 45 TON CRAWLER	1978	LS 108	9LG5294	50,000
CR-6	LINK BELT- 45 TON CRAWLER	1978	LS 108 B	9LG5370	50,000
CR-7	LINK BELT H.C. 65 TON CRANE	1978	HC 138	19G7-136	55,000
CR-8	LINK BELT- 60 TON CRAWLER	1978	LS 118	9LV5367	80,000
CR-11	LINK BELT 75 TON TRUCK	1980	HC-138A	19HO-1155A	60,000
CR-13	LINK BELT- 60 TON CRAWLER	1980	LS 118	9LV5692	-
CR-14	GROVES-35 TON ROUGH TERRAIN	1985	RT 635	68288	40,000
CR-16	LINK BELT- 60 TON CRAWLER	1979	LS 118	9LV5516	100,000
CR-17	GROVES ROUGH TERRAIN CRANE	1992	RT 528C	76650	40,000
CR-18	LINK BELT 100 TON TRUCK	1981	HC 218A	18HI-1216B	150,000
CR-19	LINK BELT- 60 TON CRAWLER	1976	LS 118	9LV20364 (Canadian #)	100,000
CR-20	LINK BELT- 35 TON ROUGH TERRAI	1998	RTC 8035	F1189965	65,000
CR-21	LINK BELT- 60 TON CRAWLER	1978	LS 118	9LV5365	120,000
CR-22	LINK BELT- 35 TON ROUGH TERRAI	1999	RTC 8035	F1191737	95,000
CR-23	LINK BELT- 60 TON CRAWLER	1977	LS 118	9LV5086	85,000
CR-24	LINK BELT- 35 TON ROUGH TERRAI	1997	RTC 8035	F1177747	90,000
CR-25	LINK BELT- 60 TON CRAWLER	1979	LS 118	9LV5439	100,000
CR-26	LINK BELT- 60 TON CRAWLER	1974	LS 118	9LV20172C (Canadian #)	100,000
CR-27	LINK BELT- 30 TON ROUGH TERRAI	2011	RTC 8030	E8KA2360	300,000
CR-28	LINK BELT- 80 TON CRAWLER	2015	LS 138 HSL	P8K5-4407	725,000
CR-29	LINK BELT- 110 TON CRAWLER	2003	LS 218H	J2J3-6505	385,000
CR-30	LINK BELT- 75 TON CRAWLER	1999	LS 138 H	B5KI9-1009	220,000
CR-31	LINK BELT- 60 TON CRAWLER	1977	LS 118	9LV5199	100,000

JUDY CONSTRUCTION COMPANY

Equipment List  
September 30, 2018

Attachment A

Page 2 of 7

JCC #	DESCRIPTION	MODEL YEAR	MODEL NO.	SERIAL NO.	INS VALUE
<u>TRACK LOADERS</u>					
EL-9	CATERPILLAR TRACK LOADER	1999	953C	2ZN02594	35,000
EL-11	CATERPILLAR TRACK LOADER	2001	953C	2ZN03918	40,000
EL-12	CATERPILLAR TRACK LOADER	2004	953C	BBX00636	55,000
EL-13	CATERPILLAR TRACK LOADER	2004	953C	BBX00833	55,000
EL-14	CATERPILLAR TRACK LOADER	2006	953C	BBX02421	60,000
EL-15	CATERPILLAR TRACK LOADER	2011	953D	LBP00988	135,000
<u>RUBBER TIRE LOADERS</u>					
IT-3	CATERPILLAR TOOL CARRIER	2001	924G	9SW01219	40,000
IT-4	CATERPILLAR TOOL CARRIER	2002	IT28G	8CR03857	40,000
IT-5	CATERPILLAR TOOL CARRIER	2005	924G	DDA02295	55,000
IT-6	CATERPILLAR TOOL CARRIER	2009	924H	HXC01177	75,000
IT-7	CATERPILLAR TOOL CARRIER	2011	924H	HXC01871	80,000
IT-8	CATERPILLAR TOOL CARRIER	2011	924H	HXC02261	80,000
IT-9	JOHN DEERE WHEEL LOADER	2015	544K	1DW544KTFE658488	135,000
<u>DOZERS</u>					
D-14	CATERPILLAR	2001	D5C	7PS01987	25,000
D-15	CATERPILLAR	2002	D5M XL	6GN02560	37,500
D-16	CATERPILLAR	2003	D6R XL	AAX00347	85,000
D-17	CATERPILLAR	2002	D8R II	6YZ01025	110,000
D-18	CATERPILLAR	2005	D3GXL	JMH01875	30,000
D-19	CATERPILLAR	2010	D3K	FFF00411	55,000
D-20	CATERPILLAR	2009	D6K	FBH01355	90,000
D-21	CATERPILLAR	1998	D9R	7TL01053	60,000

JUDY CONSTRUCTION COMPANY

Equipment List  
September 30, 2018

Attachment A

Page 3 of 7

JCC #	DESCRIPTION	MODEL YEAR	MODEL NO.	SERIAL NO.	INS VALUE
D-22	JOHN DEERE	2016	700K	1T0700KXKLG297468	130,000
D-23	JOHN DEERE	2018	850K	1T0850KXKJF329218	313,345
<u>BACKHOES</u>					
BH-22	J.I. CASE 4 WD (HYD FOR HY RAM)	2003	580M	JJG0311217	22,000
BH-24	CATERPILLAR 4 WD	2003	416D	BFP09935	20,000
BH-25	CATERPILLAR 4 WD	2005	420D	FDP22856	30,000
BH-26	J.I. CASE 4 WD (HYD FOR HY RAM)	2005	580M	N4C382408	23,000
BH-27	J.I. CASE 4 WD	2008	580M	N7C425759	28,000
BH-28	J.I. CASE 4 WD	2008	580M	N8C500076	30,000
BH-29	J.I. CASE 4 WD	2007	580M	N7C425201	28,000
BH-30	J.I. CASE 4 WD	2009	580M	N8C500160	28,000
BH-31	J.I. CASE 4 WD	2009	580M	N9C523066	30,000
BH-32	J.I. CASE 4 WD (HYD FOR HY RAM)	2012	580N	NCC560220	50,000
BH-33	J.I. CASE 4 WD	2015	580N	NFC717295	75,000
BH-34	J.I. CASE 4 WD	2015	580N	JJGN580NKFC717018	57,000
<u>EXCAVATORS</u>					
EX-22	CATERPILLAR	2002	345BL II	AGS01406	70,000
EX-23	CATERPILLAR	2003	325CL	BFE00721	60,000
EX-24	CATERPILLAR	2003	325CL	BFE01099	60,000
EX-25	CATERPILLAR	2004	330CL	DKY02530	67,500
EX-26	CATERPILLAR	2005	320CL	PAB04234	60,000
EX-27	CATERPILLAR	2005	320CL	PAB05340	60,000
EX-28	CATERPILLAR	2007	325DL	A3R00664	100,000
EX-29	LINK BELT	2008	240X2	EICJ9-4100	100,000

JUDY CONSTRUCTION COMPANY

Equipment List  
September 30, 2018

Attachment A

Page 4 of 7

JCC #	DESCRIPTION	MODEL YEAR	MODEL NO.	SERIAL NO.	INS VALUE
EX-30	CATERPILLAR	2009	329DL	JHJ00258	110,000
EX-31	CATERPILLAR W/ NPK HY RAM	2011	320DL	SPN00384	110,000
EX-32	CATERPILLAR	2011	329DL	WLT00304	125,000
EX-33	CATERPILLAR	2011	329DL	WLT00387	125,000
EX-34	CATERPILLAR	2011	320DL	SPN00652	110,000
EX-35	CATERPILLAR	2011	329DL	WLT00412	125,000
EX-36	CATERPILLAR	2012	329EL	PLW00613	125,000
EX-37	CATERPILLAR	2014	336FL	RKB00294	220,000
EX-38	KOMATSU	2015	PC290LC-11	A27145	190,000
EX-39	CATERPILLAR	2007	345CL	PJW01954	85,000
EX-40	CATERPILLAR	2007	330DL	MWP001892	105,000
EX-41	JOHN DEERE	2017	300GLC	1FF300GXCHF730539	229,900
<u>COMPACTORS</u>					
R-6	BOMAG SMOOTH DRUM	1995	BW172D-2	19520120386S	14,500
R-7	BOMAG SHEEPSFOOT	1998	BW213PDH	101580240111	15,000
R-8	CATERPILLAR SHEEPSFOOT/BLADE	1996	CP563C	5JN00355	15,000
R-9	INGERSOLL RAND SMOOTH DRUM	2001	DD-24	168094	8,500
R-10	CATERPILLAR SHEEPSFOOT/BLADE	2000	CP563D	9ZW00211	35,000
R-11	CATERPILLAR SMOOTH DRUM	2002	CS563D	9MW01154	35,000
R-12	INGERSOLL RAND SMOOTH DRUM	2004	SD77 DX	176763	25,000
R-13	ACE COMP. WHEEL FOR CAT 320	2005	DC-36 BL	7058378	5,000
R-14	CATERPILLAR SHEEPSFOOT	2001	CP433	2JM01122	21,000
R-15	CATERPILLAR SHEEPSFOOT	1991	815B	17Z01376	60,000

JUDY CONSTRUCTION COMPANY

Equipment List  
September 30, 2018

Attachment A

Page 5 of 7

JCC #	DESCRIPTION	MODEL YEAR	MODEL NO.	SERIAL NO.	INS VALUE
<u>AIR COMPRESSORS</u>					
C-11	INGERSOLL-RAND	1996	P 185WJD	265952	3,000
C-12	INGERSOLL-RAND	1997	P 185WJD	277883	3,000
C-13	INGERSOLL-RAND	1997	P 185WJD	279469	3,000
C-14	INGERSOLL-RAND	1997	P 185WJD	279347	3,500
C-15	INGERSOLL-RAND	2001	P 185WIR	320896	4,250
C-17	INGERSOLL-RAND	2008	P 185WIR	385297	7,200
C-18	INGERSOLL-RAND	2008	P 185WIR	385304	7,200
C-19	INGERSOLL-RAND	2009	P 185WIR	400917	8,900
C-20	INGERSOLL-RAND	2009	P 185WIR	400918	8,900
C-21	ATLAS COPCO	2010	XAS185	AR034888	7,000
C-22	INGERSOLL-RAND	2013	P 185WJD	54523UEXD75	12,700
<u>HYDRAULIC HAMMERS</u>					
H-4	NPK HYD HAMMER INST. ON EX-20	1995	H-10XB	45719	3,500
H-5	NPK HYD HAMMER INST.	1999	E210A	57076	5,500
H-6	ALLIED 730 HY RAM		730	2739	3,500
H-7	NPK HYD 5,000 LB HAMMER	2003	E216	73942	15,000
H-8	NPK HYD 5,500 LB HAMMER	2007	GH12	89811	32,500
H-9	NPK HYD 5,500 LB HAMMER	2011	GH12	101024	45,000
H-10	NPK HYD 3,000 LB HAMMER	2012	GH9	104424	27,500
H-11	NPK HYD 4,000 LB HAMMER - EX 31	2014	GH10	106708	42,000
H-12	ATLAS COPCO EC150 HAMMER	2016	EC150	DEQ141660	48,000
H-13	NPK HYD 5,500 LB HAMMER - EX-30	2017	GH12	121067	68,000

JUDY CONSTRUCTION COMPANY

Equipment List

September 30, 2018

Attachment A

Page 6 of 7

JCC #	DESCRIPTION	MODEL YEAR	MODEL NO.	SERIAL NO.	INS VALUE
<u>ARTICULATING TRUCKS</u>					
AT-1	VOLVO ARTICULATING TRUCK	1994	A30	A30V1479	40,000
AT-2	VOLVO ARTICULATING TRUCK	1995	A30C	A30V1724	65,000
AT-3	VOLVO ARTICULATING TRUCK	2000	A30C	60242	65,000
AT-4	VOLVO ARTICULATING TRUCK	2012	A40F	A40FV11614	195,000
AT-5	VOLVO ARTICULATING TRUCK	2012	A40F	A40FV11633	195,000
<u>GRADERS</u>					
G-2	CATERPILLAR MOTOR GRADER	1989	12G	61M13115	48,000
<u>MANLIFTS</u>					
M-2	GENIE MANLIFT	1999	S-40	S-40-2756	7,000
M-3	GENIE MANLIFT	1999	Z 45/25	Z45-12326	8,000
M-4	GENIE MANLIFT	2000	Z 45/25	Z45-13814	8,000
M-5	GENIE MANLIFT	2006	Z 45/25J	Z45-30904	18,000
M-6	GENIE SCISSORLIFT	2008	GS2646	91851	8,500
M-7	SKYJACK	2009	SJIII3215	153162	4,000
M-8	GENIE MANLIFT	2006	S-45	S4506-11122	27,500
M-9	GENIE MANLIFT	2007	S-60	S600715593	37,000
M-10	GENIE SCISSORLIFT	2008	GS1930	S3008B94532	5,000
M-11	GENIE SCISSORLIFT	2008	GS1930	S3008B94528	5,000
M-12	SKYJACK SCISSORLIFT	2014	SJIII 4632	70021371	17,700
M-13	GENIE SCISSORLIFT	2016	GS 4047	GS4716-3005	28,300
	JLG SCISSORLIFT	2004	260MRT	200119600	7,500
M-14	SKYJACK SCISSORLIFT	2010	SJIII 3219	22019810	5,194
M-15	SKYJACK SCISSORLIFT	2010	SJIII 3219	22019812	5,194

JUDY CONSTRUCTION COMPANY

Equipment List  
September 30, 2018

Attachment A

Page 7 of 7

JCC #	DESCRIPTION	MODEL YEAR	MODEL NO.	SERIAL NO.	INS VALUE
	<u>MISCELLANEOUS</u>				
LP-3	ALLMAND LIGHT PLANT	2001	LITE-NLPRC	0615PR001	3,800
LP-4	GENIE LIGHT PLANT	2005	LITE-4000N	TML05-513	3,500
LP-5	GENIE LIGHT PLANT	2008	TML-4000N	TML08-933	5,000
LP-6	TEREX LIGHT PLANT	2010	RL4000	RL410-2107	1,800
	GOMACO BRIDGE DECK MACHINE	1998	C450X	900800-103	18,500
SS-1	BOBCAT SKID STEER LOADER	1999	763	512234816	4,500
SS-2	TAKEUCHI SKID STEER LOADER	2015	TL10 CR	201001553	50,000
SS-3	CAT SKID STEER LOADER	2015	259D	FTL04287	40,000
SS-4	TAKEUCHI SKID STEER LOADER	2017	TL10V2	410000943	60,000
ME-1	TAKEUCHI MINI EXCAVATOR	2017	TB206RA	126102399	60,000
	KOBE DIESEL PILE HAMMER		K 25	10-3905	15,000
	KUBOTA RTV400 UTILITY VEHICLE	2013	RTV400	13384	6,000
	LAND PRIDE TREKER	2005		478619	4,000
	GODWIN CD150M DIESEL PUMP		SN# 16MPF0512DD067060		25,000
	BOMAG VIBRATORY PLATE	2016	BPR60/65D	101692831129	13,780
TH-1	CATERPILLAR TELEHANDLER	2008	TL1055	TBM01024	62,500
TH-2	CATERPILLAR TELEHANDLER	2007	TL943	TBL00825	50,000
	VERMEER CHIPPER	2001	BC1230A	1VRN151791002993	10,700
			TOTAL		<u>\$9,279,383</u>

## JUDY CONSTRUCTION COMPANY Major Completed Projects

Project Name	Owner	Design Engineer	Year Completed	Description	Contract Price
Bowling Green, KY Wastewater Treatment Plant Expansion	Bowling Green Municipal Utilities Mike Garner (270) 535-4366	Gresham Smith Nashville, TN Mike Burgett (615) 770-8531	2012	Exp. from 10 to 12 MGD Wastewater Trt. Plant & Class A BioSolids Dryer Facility	\$40,055,533
Louisville, KY Nightingale Pump Station and CSO Storage Basin	Louisville & Jefferson County MSD Greg Powell (502) 540-6000	HDR Engineers Louisville, KY Kyle Guthrie (502) 909-3249	2018	New 33 MGD Pump Station & 7.7 MGD Below Grade Concrete Storage Basin	\$34,004,002
Pigeon Forge, TN New Wastewater Treatment Plant	City of Pigeon Forge Pigeon Forge, TN Mark Miller (865) 429-7312	Smith Seckman Reid Nashville, TN Herby Rader (615) 347-0815	2015	New 6 MGD Wastewater Treatment Plant	\$31,083,760
Danville, KY Water Treatment Plant Expansion	City of Danville Danville, KY Earl Coffey (859) 326-0787	HDR Engineers Lexington, KY Brent Tippey (859) 629-4831	2017	Exp. from 10 to 12 MGD Various Filtration Systems	\$23,988,669
Somerset, KY Water Treatment Plant Expansion	Somerset Water Departm Somerset, KY Dana Whitis (606) 425-5364	Bell Engineering Lexington, KY David Schrader (859) 278-5412	2014	Exp. From 4 to 16 MGD Membrane Filtration	\$22,732,469
Logan-Todd Regional Water Treatment Plant	Logan Todd Regional Wa Guthrie, KY Kyle Kenner (270) 483-6990	Strand Associates, Inc. Madison, WI Scott Sterns (608) 251-4843	2003	New 10 MGD Regional Membrane Filtration Water Treatment Plant	\$21,905,678
Louisville, KY Buechel Basin Wastewater System	Louisville & Jefferson County MSD William Marshall (502) 540-6608	Burgess & Nipple Louisville, KY Dakotah DeRoche (502) 254-2344	2014	New Surge Basins: 1 Concrete - 12 MG 2 Earthen - 88 MG	\$20,585,364
Lexington, KY Town Branch Wet Weather Storage Facility	Lex-Fay Urban Co Govt Lexington, KY Kevin Levesque 859-425-2438	GRW Engineers, Inc. Lexington, KY Joe Henry 859-223-3999	2016	22 MG Prestressed Concrete Storage Tank 56 MGD Pump Station	\$19,017,817
Shelbyville, TN Wastewater Treatment Treatment Plant Expansion	Shelbyville Power, Water Shelbyville, TN David Crowell (931) 685-0113	J.R Wauford & Company Nashville, TN Kevin Young (615) 883-3243	2012	Expansion from 4 to 6.5 MGD Wastewater Treatment Plant	\$18,068,419
Knoxville, TN Daugherty Water Treatment Plant Upgrade	West Knox Utilities Knoxville, TN Drexel Heidel (865) 690-2521	GRW Engineers, Inc. Nashville, TN Lewis Robbins (615) 366-1600	2014	Exp. From 2 to 8 MGD Membrans Filtration	\$17,292,026
Shepherdsville, KY Wastewater Treatment Treatment Plant Expansion	City of Shepherdsville Shepherdsville, KY Larry Hatfield (502) 543-2923	QK4 Louisville, KY Rob Campbell (502) 992-2927	2012	5 MGD Wastewater Treatment Plant Expansion	\$14,089,145
Louisville, KY Fairmount Road CSO & PS	Louisville & Jefferson County MSD Steven Leong (502) 540-6837	Burgess & Nipple Louisville, KY Dakotah DeRoche (502) 254-2344	2016	New Surge 3.5 MGD Surge Basin New Pump Station	\$11,677,345
Irvine, KY Regional Wastewater Treatment Plant	City of Irvine Irvine, KY Bee Williams (606) 723-2197	CDP Engineers, Inc. Lexington, KY Morey Lampson (859) 264-7500	2012	New 2 MGD Regional Wastewater Treatment Plant	\$11,463,646
Lexington, KY Lower Cane Run Wet Weather Storage Facility	Lex-Fay Urban Co Govt Lexington, KY Kevin Levesque 859-425-2438	HDR Engineers Lexington, KY Anthony Pellegrino (859) 629-4892	2017	11 MG Prestressed Concrete Storage Tank Related Structures	\$11,378,101
Glasgow, KY Wastewater Treatment Treatment Plant	Glasgow Water Co. Glasgow, KY Scott Young (270) 651-3727	Cannon & Cannon, Inc. Knoxville, TN Doug Unger (865) 670-8555	2015	Storm Surge and Circular Clarifier Improvements	\$10,776,906
Abingdon, VA Middle Fork Water Treatment Plant Expansion	Washington Co. S.A. Abingdon, VA Robbie Cornett (276) 783-7159	The Lane Group Chilhowie, VA Bobby Lane (276) 646-2520	2014	Exp. From 6.6 to 12 MGD Membrane Filtration	\$10,625,307



**JUDY CONSTRUCTION COMPANY**

Work on Hand  
September 30, 2018

Owner	Project	Project Amount	Completion %	DBE Participation %
Monroe County Water District Tompkinsville, KY	Water Treatment Plant Improvements	\$11,270,917	96.6%	1.8%
West Knox Utility District Knoxville, TN	New Melton Hill Wastewater Treatment Plant	\$41,255,000	62.9%	18.7%
Lexington-Fayette Urban Co Govt Lexington, KY	West Hickman Wet Weather Storage	\$61,822,470	78.9%	78.9%
MSD of Buncombe County Asheville, NC	Plant Headworks Improvements	\$9,310,761	78.5%	0.0%
City of Pikeville Pikeville, KY	Wastewater Treatment Plant Improvements	\$16,086,438	56.9%	6.3%
Woodlawn Utilitiy District Clarksville, TN	New Raw Water Intake	\$5,712,400	66.9%	0.0%
Winchester Municipal Utilities Winchester, KY	New Water Treatment Plant	\$19,982,300	10.0%	2.8%
Lexington-Fayette Urban Co Govt Lexington, KY	Town Branch Primary Digester Improvements	\$9,746,750	20.0%	0.0%
City of Bardstown Bardstown, KY	New Ammonia Feed System Water Treatment Plant	\$887,643	98.5%	0.8%
Lexington-Fayette Urban Co Govt Lexington, KY	East Hickman Wet Weather Storage Facility	\$14,094,623	10.5%	6.6%
Richmond Utilities Board Richmond, KY	Water Treatment Plant Standby Power	\$2,111,000	6.9%	0.0%
West Knox Utility District Knoxville, TN	Karns Wastewater Treatment Plant Modifications	\$9,180,000	15.6%	12.9%

This is a true representation of our current work in progress.

BY: 

Steve Judy, President

**JUDY CONSTRUCTION COMPANY**  
Key Employees

Name	Position	Years of Const. Experience	Type of Work	In What Capacity
Steve Judy	President	34	General Construction	Executive Management
Ben Williams	Vice President	29	General Construction	Construction Management
James K. Cowley	Secretary/Treasurer	39	Accounting	Financial Management
Owen Yocum	Project Manager	40	General Construction	Construction Management
Tom McConathy	Engineer	39	General Construction	Civil Engineering
Danny Howard	Safety Director	20	General Construction	Occupational Safety
Tim Courtney	Engineer	23	General Construction	Civil Engineering
Kista Thomas	Engineer	20	General Construction	Civil Engineering
John Whalen	Engineer	19	General Construction	Civil Engineering
Seth Nutt	Engineer	19	General Construction	Civil Engineering
Clinton Jones	Estimator	20	General Construction	Construction Management
Paul Lawrence	Project Management	19	General Construction	Construction Management
Jeanie Anness	Office Manager	39	Clerical	Office Manager
Randy Campbell	Superintendent	42	General Construction	Construction Supervision
Bill Robinson	Superintendent	40	General Construction	Construction Supervision
Ray Sandlin	Superintendent	40	General Construction	Construction Supervision
Dennis Scalf	Superintendent	38	General Construction	Construction Supervision
Guy Waters	Superintendent	37	General Construction	Construction Supervision
Rickey Raisor	Superintendent	34	General Construction	Construction Supervision
Jimmy Gregory	Superintendent	33	General Construction	Construction Supervision
Darryl Wells	Superintendent	33	General Construction	Construction Supervision
Steven Sandlin	Superintendent	31	General Construction	Construction Supervision
Rick Thomas	Superintendent	27	General Construction	Construction Supervision
Stewart Parmley	Superintendent	26	General Construction	Construction Supervision
Steve Sullivan	Superintendent	25	General Construction	Construction Supervision
Macy Gibson	Superintendent	19	General Construction	Construction Supervision
Nathan Robinson	Superintendent	19	General Construction	Construction Supervision
Matthew Keeton	Superintendent	19	General Construction	Construction Supervision



# JUDY

**Construction Co.**  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

A & A Concrete  
P.O. Box 72282  
Louisville, KY 40272

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

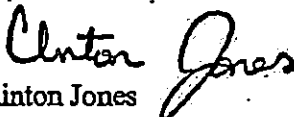
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,

  
Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*



W. Hickman

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to

A & A Concrete  
 P.O. Box 72282  
 Louisville, KY 40272



9590 9402 3726 7335 5210 40

2. Article Number (Transfer from service label)

7017 3380 0003 0862 5627

PS Form 3811, July 2015 PSN 7530-02-000-9053

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature  
 X *M. Malone*  Agent  Addressee

B. Received by (Printed Name) *Melissa Malone* C. Date of Delivery *10/4/18*

D. Is delivery address different from item 1?  Yes  No  
 If YES, enter delivery address below:

OCT 08 2018

3. Service Type
- Adult Signature
  - Adult Signature Restricted Delivery
  - Certified Mail®
  - Certified Mail Restricted Delivery
  - Collect on Delivery
  - Collect on Delivery Restricted Delivery
  - Priority Mail Express®
  - Registered Mail™
  - Registered Mail Restricted Delivery
  - Return Receipt for Merchandise
  - Signature Confirmation™
  - Signature Confirmation Restricted Delivery
  - Restricted Delivery

Domestic Return Receipt

# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Bar-Tie Reinforcing  
14748 Red Hog Road  
Rising Sun, IN 47040

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

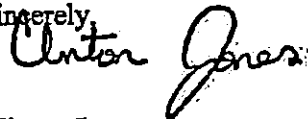
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*



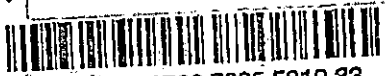
W. Hickman

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Bar-Tie Reinforcing  
 14748 Red Hog Pike  
 Rising Sun, IN 47040



9590 9402 3726 7335 5210 33

2. Article Number (Transfer from service label)

7017 3380 0001 0862 5610

PS Form 3811, July 2015 PSN 7530-02-000-9053

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature  A  B

X *W. Hickman*

B. Received by (Printed Name)  C. Date of

*W. Hickman* 10/5/18

3. Is delivery address different from item 1?  Yes  No  
If YES, enter delivery address below:

OCT 11 2018

3. Service Type
- Adult Signature
  - Adult Signature Restricted Delivery
  - Certified Mail
  - Certified Mail Restricted Delivery
  - Collect on Delivery
  - Collect on Delivery Restricted Delivery
  - Insured Mail
  - Priority Mail Express
  - Registered Mail™
  - Registered Mail Restricted Delivery
  - Return Receipt for Merchandise
  - Signature Confirmation
  - Signature Confirmation Restricted Delivery

Red Delivery

Domestic Return Receipt

# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Bluegrass of Lexington  
1402 Versailles Road  
Lexington, KY 40504

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

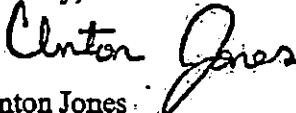
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



Celebrating 40 Years of Business





# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Cedar Valley Seeding  
Redmon Road  
Paris, KY 40361

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

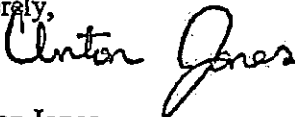
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*



# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Circle City Rebar, LLC  
4002 Industrial Blvd.  
Indianapolis, IN 46254

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

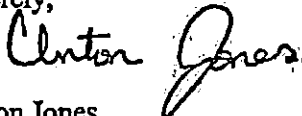
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



Celebrating 40 Years of Business



WITCKEMAN

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you:
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to

Circle City Rebar, LLC  
 4002 Industrial Blvd.  
 Indianapolis, IN 46254



9590 9402 3726 7335 5210 02

2. Article Number (transfer from service label)

7017 3380 10001 0862 5085

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature  Agent  
 Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1?  Yes  
 If YES, enter delivery address below:  No

OCT 17 2018

3. Service Type
- Adult Signature
  - Adult Signature Restricted Delivery
  - Certified Mail<sup>SM</sup>
  - Certified Mail Restricted Delivery
  - Collect on Delivery
  - Collect on Delivery Restricted Delivery
  - Insured Mail
  - Restricted Delivery
  - Priority Mail Express<sup>SM</sup>
  - Registered Mail<sup>SM</sup>
  - Registered Mail Restricted Delivery
  - Return Receipt for Merchandise
  - Signature Confirmation<sup>SM</sup>
  - Signature Confirmation Restricted Delivery

# JUDY Construction Co.

GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Harmon Steel, Inc.  
623 South State Street  
North Vernon, IN 47265

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

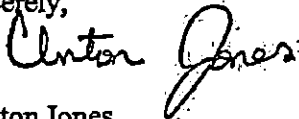
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*



W. HICKMAN

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Harmon Steel, Inc.  
623 South State Street  
North Vernon, IN 47265



2. Article Number (Transfer from service label)

7017 3380 0001 0862 5078

**COMPLETE THIS SECTION ON DELIVERY**

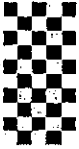
A. Signature  
 Agent  
 Addressee

B. Received by (Printed Name)      C. Date of Delivery  
 S. Jackson      10-5-2018

D. Is delivery address different from item 1?  Yes  
 If YES, enter delivery address below:  No

OCT 09 2018

3. Service Type
- |  |   |
|--|---|
| <input type="checkbox"/> Adult Signature                         | <input type="checkbox"/> Priority Mail Express®                     |
| <input type="checkbox"/> Adult Signature Restricted Delivery     | <input type="checkbox"/> Registered Mail™                           |
| <input type="checkbox"/> Certified Mail®                         | <input type="checkbox"/> Registered Mail Restricted Delivery        |
| <input type="checkbox"/> Certified Mail Restricted Delivery      | <input type="checkbox"/> Return Receipt for Merchandise             |
| <input type="checkbox"/> Collect on Delivery                     | <input type="checkbox"/> Signature Confirmation™                    |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Restricted Delivery                     |   |



# JUDY Construction Co.

GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Harmon Steel, Inc.  
623 South State Street  
North Vernon, IN 47265

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at mcco@judyconstructionco.com

Yes, I am interested \_\_\_\_\_

No, I am not interested

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,

Clinton Jones

CJ/mc



# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Javier Steel  
P.O. Box 7448  
Louisville, KY 40257

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*



# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 | CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Lykins Reinforcing Steel  
P.O. Box 21325  
Louisville, KY 40221

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mcco@judyconstructionco.com](mailto:mcco@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*





**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to

Lykins Reinforcing Steel  
 P.O. Box 21325  
 Louisville, KY 40221



9590 9402 3726 7335 5209 75

2. Article Number (Transfer from service label)

7017 3380 0001 0862 5054

PS Form 3811, July 2015 PSN 7530-02-000-9053

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature  Agent  
 Addressee

B. Received by (Printed Name)  
 Ricky Lykins

C. Date of Delivery  
 OCT 09 2018

D. Is delivery address different from item 1?  Yes  
 If YES, enter delivery address below:  No

3. Service Type
- Adult Signature
  - Adult Signature Restricted Delivery
  - Certified Mail
  - Certified Mail Restricted Delivery
  - Collect on Delivery
  - Collect on Delivery Restricted Delivery
  - Priority Mail Express®
  - Registered Mail™
  - Registered Mail Restricted Delivery
  - Return Receipt for Merchandise
  - Signature Confirmation™
  - Signature Confirmation Restricted Delivery

Domestic Return Receipt

# JUDY Construction Co.

GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

McKinney Painting  
104 Industry Road  
Versailles, KY 40383

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

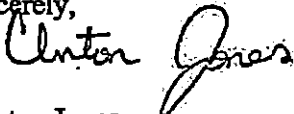
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*




PS Form 3811, July 2015 PSN 7530-02-000-9053

7017 3380 0001 0552 5047

2. Article Number (Transfer from service label)

9590 9402 3726 7335 5209 68

  
 McKinney Painting  
 104 Industry Road  
 Versailles, KY 40383

1. Article Addressed to:  
 or on the front if space permits.  
 ■ Attach this card to the back of the mailpiece,  
 so that we can return the card to you.  
 ■ Print your name and address on the reverse  
 ■ Complete items 1, 2, and 3.

**SENDER: COMPLETE THIS SECTION**

3. Service Type  
 Priority Mail Express®  
 Registered Mail™  
 Registered Mail Restricted Delivery  
 Certified Mail®  
 Certified Mail Restricted Delivery  
 Return Receipt for Delivery  
 Collect on Delivery  
 Collect on Delivery Restricted Delivery  
 Signature Confirmation™  
 Restricted Delivery  
 Mail Restricted Delivery

4. Domestic Return Receipt

A. Signature *Chris Steffen*  
 Agent  
 Addressee

B. Received by (Printed Name) *Chris Steffen*  
 C. Date of Delivery *10/3/18*

D. Is delivery address different from item 1?  Yes  No  
 If Yes, enter delivery address below:

OCT 05 2018

**COMPLETE THIS SECTION ON DELIVERY**

MICHIGAN

# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

M & M Manufacturing  
709 Sportsman Lake Road  
Franklin, KY 42134

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

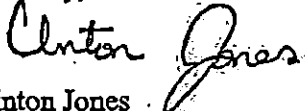
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

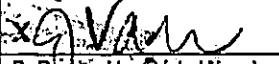
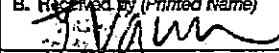

CJ/mc



*Celebrating 40 Years of Business*



W Hickman

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> <li>■ Complete items 1, 2, and 3.</li> <li>■ Print your name and address on the reverse so that we can return the card to you.</li> <li>■ Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	A. Signature 	<input type="checkbox"/> Agent <input type="checkbox"/> Addressee
1. Article Addressed to:  <p style="text-align: center;">M &amp; M Manufacturing 709 Sportsman Lake Road Franklin, KY 42134</p>	B. Received by (Printed Name) 	C. Date of Delivery <p style="text-align: center;">10/9/18</p>
2. Article Number (Transfer from service label)   9590 9402 3726 7335 5209 51	7. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below. <input type="checkbox"/> No  <p style="text-align: center;">OCT 09 2018</p>	
3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Signature Confirmation Restricted Delivery	
7017 3380 0001 0862 5030 Restricted Delivery	PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt	

# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Somethin Bloomin  
1045 Higbee Mill Road  
Lexington, KY 40503

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*



**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

Somethin Bloomin, LLC  
 1045 Higbee Mill Road  
 Lexington, KY 40503



9590 9402 3726 7335 5209 44

2. Article Number (transfer from service label)

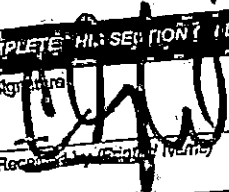
7017 3380 0001 0862 7065

PS Form 3811, July 2015 PSN 7530-02-000-9063

WHICH MAY BE

**COMPLETE THIS SECTION FOR DELIVERY**

A. Signature  Agent  Addressee

X   Addressee

B. Received by (Print Name)  Agent  Addressee

C. Date of Delivery  
 10/13

D. Is delivery address different from item 1?  Yes  
 If YES, enter delivery address below:  No  
 OCT 08 2015

3. Service Type
- Adult Signature
  - Adult Signature Restricted Delivery
  - Certified Mail®
  - Certified Mail Restricted Delivery
  - Collect on Delivery
  - Collect on Delivery Restricted Delivery
  - Registered Mail™
  - Registered Mail Restricted Delivery
  - Return Receipt for Merchandise
  - Signature Confirmation™
  - Signature Confirmation Restricted Delivery
  - Priority Mail Express®

Domestic Return Receipt

# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

TEM Electric  
3560 Bashford Ave., Suite 100  
Louisville, KY 40218

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

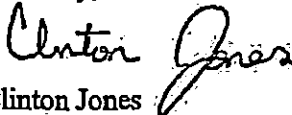
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*





W. Wakefield

**SENDER: COMPLETE THIS SECTION**

- 1 Complete items 1, 2, and 3.
- 2 Print your name and address on the reverse so that we can return the card to you.
- 3 Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

TEM Electric  
 3560 Bashford Ave., Suite 100  
 Louisville, KY 40218



9590 9402 3726 7335 5209 37

2. Article Number (Transfer from service label)

7017 3380 0001 0862 7058

PS Form 3811, July 2015 PSN 7530-02-000-9053

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

x *M. Wakefield*

Agent

Addressee

B. Received by (Printed Name)

M. WAKEFIELD

C. Date of Delivery

10/4/18

D. Is delivery address different from item 1?  Yes.  
 If YES, enter delivery address below:  No

OCT 08 2018

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery

- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

Standard Delivery

Domestic Return Receipt

# JUDY Construction Co.

GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

SBA KY District Office  
600 Dr. Martin Luther King, Jr Place, Room 188  
Louisville, KY 40202

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

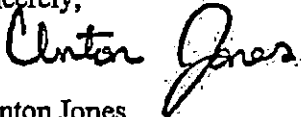
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



*Celebrating 40 Years of Business*



**SENDER COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

SBA KY District Office  
 600 Dr. Martin Luther King Jr Place Room 188  
 Louisville, KY 40202

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature *Marie Guilford*  Agent  
 Addressee

B. Received by (Printed Name) *Marie Guilford* C. Date of Delivery *10/8/18*

Is delivery address different from item 1?  Yes  
 If YES, enter delivery address below:  No

OCT 08 2018



9590 9402 3726 7335 5210 64

2. Article Number (Transfer from service label)

7017 3380 0001 0862 5641

3. Service Type
- Adult Signature
  - Adult Signature Restricted Delivery
  - Certified Mail<sup>SM</sup>
  - Certified Mail Restricted Delivery
  - Collect on Delivery
  - Collect on Delivery Restricted Delivery
  - Priority Mail Express<sup>SM</sup>
  - Registered Mail<sup>SM</sup>
  - Registered Mail Restricted Delivery
  - Return Receipt for Merchandise
  - Signature Confirmation<sup>SM</sup>
  - Signature Confirmation Restricted Delivery

Collect on Delivery

Domestic Return Receipt

PS Form 3811, July 2015 PSN 7530-02-000-9053

# JUDY

Construction Co.  
GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 28, 2018

Indianapolis MBC  
2126 North Meridian, Suite 110  
Indianapolis, IN 46202

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

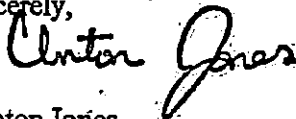
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc



Celebrating 40 Years of Business



W. Hickman

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

**1. Article Addressed to:**

Indianapolis MBC  
 2126 North Meridian, Suite 110  
 Indianapolis, IN 46202



9590 9402 3726 7335 5210 57

**2. Article Number (transfer from service label)**

7017 3380 0001 0862 5634

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

*W. A. ROY*

- Agent
- Addressee

B. Received By (Printed Name)

*Carolyn Masby*

C. Date of Delivery

D. Is delivery address different from item 1?  Yes  
If YES, enter delivery address below:  No

- 3. Service Type**
- Adult Signature
  - Adult Signature Restricted Delivery
  - Certified Mail®
  - Certified Mail Restricted Delivery
  - Collect on Delivery
  - Collect on Delivery Restricted Delivery
  - Priority Mail Express®
  - Registered Mail™
  - Registered Mail Restricted Delivery
  - Return Receipt for Merchandise
  - Signature Confirmation™
  - Signature Confirmation Restricted Delivery

41031-5598  
MISSOURI

09/28/2018 (800)275-8777 10:37 AM

-----  
Duplicate  
Product Sale Final  
Description Qty Price  
-----

Prepaid Mail 1  
(Weight:0 lbs. 0.50 oz.)  
(Destination:LOUISVILLE, KY 40218)  
(Acceptance Date:09/28/2018 10:35:58)  
(Label #:70173380000108627058)

Prepaid Mail 1  
(Weight:0 lbs. 1.10 oz.)  
(Destination:LEXINGTON, KY 40503)  
(Acceptance Date:09/28/2018 10:36:06)  
(Label #:70173380000108627065)

Prepaid Mail 1  
(Weight:0 lbs. 1.60 oz.)  
(Destination:FRANKLIN, KY 42134)  
(Acceptance Date:09/28/2018 10:36:12)  
(Label #:70173380000108625030)

Prepaid Mail 1  
(Weight:0 lbs. 2.20 oz.)  
(Destination:VERSAILLES, KY 40383)  
(Acceptance Date:09/28/2018 10:36:23)  
(Label #:70173380000108625047)

Prepaid Mail 1  
(Weight:0 lbs. 2.70 oz.)  
(Destination:LOUISVILLE, KY 40221)  
(Acceptance Date:09/28/2018 10:36:30)  
(Label #:70173380000108625054)

Prepaid Mail 1  
(Weight:0 lbs. 3.30 oz.)  
(Destination:LOUISVILLE, KY 40257)  
(Acceptance Date:09/28/2018 10:36:36)  
(Label #:70173380000108625061)

Prepaid Mail 1  
(Weight:0 lbs. 3.80 oz.)  
(Destination:NORTH VERNON, IN 47265)  
(Acceptance Date:09/28/2018 10:36:44)  
(Label #:70173380000108625078)

Prepaid Mail 1  
(Weight:0 lbs. 4.40 oz.)  
(Destination:INDIANAPOLIS, IN 46254)  
(Acceptance Date:09/28/2018 10:36:51)  
(Label #:70173380000108625085)

Prepaid Mail 1  
(Weight:0 lbs. 4.90 oz.)  
(Destination:PARIS, KY 40361)  
(Acceptance Date:09/28/2018 10:36:57)  
(Label #:70173380000108625092)

Prepaid Mail 1  
(Weight:0 lbs. 5.50 oz.)  
(Destination:LEXINGTON, KY 40504)  
(Acceptance Date:09/28/2018 10:37:02)

(Label #:70173380000108625108)  
Prepaid Mail 1  
(Weight:0 lbs. 6.00 oz.)  
(Destination:RISING SUN, IN 47040)  
(Acceptance Date:09/28/2018 10:37:10)  
(Label #:70173380000108625610)  
Prepaid Mail 1  
(Weight:0 lbs. 6.60 oz.)  
(Destination:LOUISVILLE, KY 40272)  
(Acceptance Date:09/28/2018 10:37:17)  
(Label #:70173380000108625627)  
Prepaid Mail 1  
(Weight:0 lbs. 7.10 oz.)  
(Destination:INDIANAPOLIS, IN 46202)  
(Acceptance Date:09/28/2018 10:37:23)  
(Label #:70173380000108625634)  
Prepaid Mail 1  
(Weight:0 lbs. 7.70 oz.)  
(Destination:LOUISVILLE, KY 40202)  
(Acceptance Date:09/28/2018 10:37:31)  
(Label #:70173380000108625641)

Total \$0.00

Preview your Mail  
Track your Packages  
Sign up for FREE @  
[www.informedelivery.com](http://www.informedelivery.com)

All sales final on stamps and postage  
Refunds for guaranteed services only  
Thank you for your business

HELP US SERVE YOU BETTER

TELL US ABOUT YOUR RECENT  
POSTAL EXPERIENCE

Go to:  
<https://postalexperience.com/Pos>

840-5450-0018-001-00026-11052-02

or scan this code with  
your mobile device:



or call 1-800-410-7420.

YOUR OPINION COUNTS

Bill #: 840-54500018-1-2611052-2  
Clerk: 03

# JUDY Construction Co. GENERAL CONTRACTORS

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 27, 2018

## LFUCG Certified MWDBEs and Veteran-Owned Businesses

Ref: West Hickman WWTP Final Clarifiers No. 7 and No. 8 Structural Repairs  
Nicholasville, KY

Dear Estimator:

We will be bidding as prime contractor to the Lexington-Fayette Urban County Government (LFUCG) on the above referenced project on October 16, 2018.

We are interested in receiving subcontract bids on the following categories of work:

- |                                     |                          |
|-------------------------------------|--------------------------|
| (1) Seeding                         | (3) Electrical           |
| (2) Miscellaneous Fabricated Metals | (4) Resteel Installation |

The plans and specifications for this project can be seen by stopping at our office in Cynthiana, KY, or by contacting the estimator listed below for access to digital plans on our website.

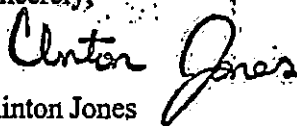
We would appreciate your scope of work and pricing be submitted to us before October 15, 2018 for review and discussion (if necessary). Please check the appropriate space and return to us by mail, fax (859-234-3480), or email at [mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

Yes, I am interested \_\_\_\_\_

No, I am not interested \_\_\_\_\_

If you are interested in any portion of this project, please contact our office and we will provide specific quantities, description of the work and any additional details you may require. Should you require assistance with providing the required insurance, bonding, or have any other concerns, please let us know. If you cannot quote a complete portion of the work listed above, please notify us in advance so that this can be discussed. If we can be of help in any way, do not hesitate to contact the undersigned.

Sincerely,



Clinton Jones

CJ/mc





## MWDBE & Veteran-Owned Request Emailed to the Following 9-27-18

Business	Contact	Email Address	Phone
LFUCG	Sherita Miller	smiller@lexingtonky.gov	859-258-3323
Commerce Lexington – Minority Business Development	Tyrone Tyra	ttyra@commercelexington.com	859-226-1625
Tri-State Minority Supplier Diversity Council	Susan Marston	smarston@tsmsdc.com	502-365-9762
Small Business Development Council Shirie Hawkins	Shawn Rogers	shawn.rogers@uky.edu	859-257-7666
Community Ventures Corporation	Phyllis Alcorn	palcorn@cvky.org	859-231-0054
KY Transportation Cabinet (KYTC)	Melvin Bynes	Melvin.bynes2@ky.gov	502-564-3601
KYTC Pre-Qualification	Sheila Eagle	Sheila.Eagle@ky.gov	502-782-4815
Ohio River Valley Women's Business Council (WBENC)	Sheila Mixon	smixon@orwbc.org	513-487-6537
Kentucky MWBE Certification Program	Yvette Smith	Yvette.Smith@ky.gov	502-564-8099
National Women Business Owner's Council (NWBOC)	Janet Harris-Lange	janet@nwbo.org	800-675-5066
Small Business Administration	Robert Coffey	robertcoffey@sba.gov	502-582-597
LaVoz de Kentucky	Andres Cruz	lavozdeky@yahoo.com	859-621-2106
The Key News Journal	Patrice Muhammad	paatricem@keynewsjournal.com	859-373-9428
* List was provided by LFUCG			



**EMAILED**

**BID Notification/Solicitation**

**General title of work:** RFP for DBE Subcontracting & Materials  
**Solicitor's POC and title:** Clinton Jones, Estimator

**Today's Date:** September 28, 2018  
**Solicitor's Name:** Judy Construction Company  
**Solicitor's Address:** P.O. Box 457  
**City:** Cynthiana, KY 41031

**BID DUE DATE:** October 16, 2018  
**BID DUE TIME:** 2:00 Eastern Standard Time

---

**Judy Construction Company is inviting quotes on the following:**

**Project:** West Hickman WWTP Final Clarifiers No.7 & No.8 Structural Repairs

**Project Location:** 645 West Hickman Road  
Nicholasville, KY 40356

**Proposal or Quotes Requested for the following work:**  
Seeding, Miscellaneous Fabricate Metals,  
Electrical, Reinforcing Steel Installation

**Additional Information**

DBEs, WOSBs, MBEs and VOSBs are strongly encouraged to bid

**Solicitation and other documents available at the following location(s):**

LFUCG  
Division of Central Purchasing  
200 E. Main Street, Third Floor, Room 338  
Lexington, KY 40507  
859-258-3320

LFUCG  
Division of Water Quality  
125 Lisle Industrial Avenue, Suite 180  
Lexington, KY 40511  
859-425-2400

OR

[www.judycc.com](http://www.judycc.com)

And at our office: 103 South Church Street, Cynthiana, KY 41031

**Project Contact Information:**

**Name:** Clinton Jones  
**Phone:** 859-234-6900  
**Email:** [cjones@judyconstructionco.com](mailto:cjones@judyconstructionco.com)

**Mary Coy**

---

**From:** Mary Coy  
**Sent:** Friday, September 28, 2018 8:45 AM  
**To:** KYPTACinfo@kstc.com; 'KYPTACOS@kstc.com'  
**Subject:** West Hickman WWTP Final Clarifiers No.7 & No.8 Structural Repairs  
**Attachments:** KYPTAC BID Notification - prime.docx

Please see the attached.

Thank you,

Mary Charles Coy  
Judy Construction Company  
859-234-6900 - Ph.  
859-234-3480 - Fax  
[mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)

**Mary Coy**

---

**From:** postmaster@kstc.com  
**To:** dhenderson@kstc.com  
**Sent:** Friday, September 28, 2018 8:46 AM  
**Subject:** Delivered: West Hickman WWTP Final Clarifiers No.7 & No.8 Structural Repairs

**Your message has been delivered to the following recipients:**

[dhenderson@kstc.com](mailto:dhenderson@kstc.com)

**Subject:** West Hickman WWTP Final Clarifiers No.7 & No.8 Structural Repairs

Mary Coy

---

**From:** postmaster@kstc.com  
**To:** megdroberts@gmail.com  
**Sent:** Friday, September 28, 2018 8:46 AM  
**Subject:** Relayed: West Hickman WWTP Final Clarifiers No.7 & No.8 Structural Repairs

**Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:**

[megdroberts@gmail.com](mailto:megdroberts@gmail.com)

Subject: West Hickman WWTP Final Clarifiers No.7 & No.8 Structural Repairs



EMAILED

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 27, 2018

Richmond Register  
380 Big Hill Ave.  
Richmond, KY 40475

TO WHOM IT MAY CONCERN:

We request that the following ad be run in your paper in the "Bids/Proposals" section:

---

**NOTICE TO SUBCONTRACTORS (Bold Print Please)**

Judy Construction Company is bidding as a general contractor to the Lexington-Fayette Urban County Government (LFUCG) on the West Hickman WWTP Final Clarifier No.7 and No.8 Structural Repairs October 16, 2018. Opportunities exist for the following trades: Electrical, Seeding, Misc. Fabricated Metals and Resteel Installation. Subcontractors should contact Clinton Jones in our office at (859) 234-6900 to get information on plans and specifications. Minorities are encouraged to apply.

---

**AN EQUAL OPPORTUNITY ORGANIZATION**

We would appreciate it if you would run this ad in your next available edition.

Please send a copy of the ad to our office to the attention of the undersigned. All billing information appears on the top of this letter. Please send copies of the tear sheets once the ad has run.

Thank you,

Clinton Jones

CJ/mc



**Mary Coy**

---

**From:** Microsoft Outlook  
**To:** classifieds2@richmondregister.com  
**Sent:** Thursday, September 27, 2018 3:51 PM  
**Subject:** Relayed: West Hickman WWTP Final Clarifier Repairs

**Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:**

[classifieds2@richmondregister.com](mailto:classifieds2@richmondregister.com) ([classifieds2@richmondregister.com](mailto:classifieds2@richmondregister.com))

Subject: West Hickman WWTP Final Clarifier Repairs



EMAILED

P.O. BOX 457 CYNTHIANA, KENTUCKY 41031  
Telephone (859) 234-6900 Fax (859) 234-3480  
www.judyconstructionco.com

September 27, 2018

Lexington Herald-Leader  
Main & Midland  
Lexington, KY 40507

TO WHOM IT MAY CONCERN:

We request that the following ad be run in your paper in the "Bids/Proposals" section:

---

**NOTICE TO SUBCONTRACTORS (Bold Print Please)**

Judy Construction Company is bidding as a general contractor to the Lexington-Fayette Urban County Government (LFUCG) on the West Hickman WWTP Final Clarifier No.7 and No.8 Structural Repairs October 16, 2018. Opportunities exist for the following trades: Electrical, Seeding, Misc. Fabricated Metals and Resteel Installation. Subcontractors should contact Clinton Jones in our office at (859) 234-6900 to get information on plans and specifications. Minorities are encouraged to apply.

---

**AN EQUAL OPPORTUNITY ORGANIZATION**

We would appreciate it if you would run this ad in your next available edition.

Please send a copy of the ad to our office to the attention of the undersigned. All billing information appears on the top of this letter. Please send copies of the tear sheets once the ad has run.

Thank you,

Clinton Jones

CJ/mc





**Mary Coy**

---

**From:** Microsoft Outlook  
**To:** hllegalads@herald-leader.com  
**Sent:** Thursday, September 27, 2018 3:43 PM  
**Subject:** Relayed: West Hickman WWTP Final Clarifier Repairs

**Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:**

hllegalads@herald-leader.com (hllegalads@herald-leader.com)

Subject: West Hickman WWTP Final Clarifier Repairs

**Mary Coy**

---

**From:** LEX Herald-Leader Legal Ads <hllegalads@herald-leader.com>  
**Sent:** Thursday, September 27, 2018 4:11 PM  
**To:** LEX Herald-Leader Legal Ads  
**Cc:** Jeanie Anness; Mary Coy  
**Subject:** Re: West Hickman WWTP Final Clarifier Repairs  
**Attachments:** JUDY CONSTRUCTION 092918 AD.pdf

Attached is the proof and cost of the ad scheduled to run on Sat., 9/29/18. Please confirm before 10:00 am tomorrow morning, Fri., 9/28/18 if the ad is approved to run as scheduled.

Thank you.

On Thursday, September 27, 2018 at 3:42:31 PM UTC-4, Mary Coy wrote:

Please run this in the next available edition.

Call with any questions.

Thank you,

*Mary Charles Coy*

*Judy Construction Company*

*859-234-6900 – Pl*

*859-234-3480 – Fax*

[mccoy@judyconstructionco.com](mailto:mccoy@judyconstructionco.com)



## Order Confirmation

<p><b><u>Customer</u></b> JUDY CONSTRUCT JUDY CONSTRUCTION COMPANY</p> <p><b><u>Customer Account</u></b> 171819</p> <p><b><u>Customer Address</u></b> PO BOX 457 CYNTHIANA KY 41031 USA</p> <p><b><u>Customer Phone</u></b> 859-234-6900</p> <p><b><u>Customer Fax</u></b></p> <p><b><u>Sales Rep</u></b> bluma@herald-leader.com</p>	<p><b><u>Payer Customer</u></b> JUDY CONSTRUCT JUDY CONSTRUCTION COMPANY</p> <p><b><u>Payer Account</u></b> 171819</p> <p><b><u>Payer Address</u></b> PO BOX 457 CYNTHIANA KY 41031 USA</p> <p><b><u>Payer Phone</u></b> 859-234-6900</p> <p><b><u>Customer EMail</u></b></p> <p><b><u>Order Taker</u></b> lnapier@herald-leader.com</p>
---	--

<b><u>PO Number</u></b>	<b><u>Payment Method</u></b> Invoice	<b><u>Blind Box</u></b>	<b><u>Tear Sheets</u></b> 1	<b><u>Proofs</u></b> 1	<b><u>Affidavits</u></b> 0
-------------------------	---	-------------------------	--------------------------------	---------------------------	-------------------------------

<b><u>Net Amount</u></b> \$135.50	<b><u>Tax Amount</u></b> \$0.00	<b><u>Total Amount</u></b> \$135.50	<b><u>Payment Amount</u></b> \$0.00	<b><u>Amount Due</u></b> \$135.50
--------------------------------------	------------------------------------	--	--	--------------------------------------

<b><u>Ad Order Number</u></b> 0003876968	<b><u>Order Source</u></b>	<b><u>Ordered By</u></b>	<b><u>Special Pricing</u></b>
<b><u>Invoice Text</u></b>			<b><u>Promo Type</u></b>
<b><u>Package Buy</u></b>			<b><u>Materials</u></b>

**Ad Order Information**

**Ad Number:** 0003876968-01      **Ad Type:** LEX-Legal Liners      **Production Method:** AdBooker      **Production Notes:**

**External Ad Number:**      **Ad Attributes:**      **Ad Released:** No      **Pick Up:**

**Ad Size:** 1 X 25 II      **Color:**

**Product:** LEX-Herald-Leader      **Placement:** 0300 - Legals Classified      **Times Run:** 1      **Schedule Cost:** \$135.50

**Run Schedule Invoice Text:** NOTICE TO SUBCONTRACTORS Judy Construc      **Position:** 0301 - Legals & Public Notices

**Run Dates:** 09/29/2018

**NOTICE TO SUBCONTRACTORS**

Judy Construction Company is bidding as a general contractor to the Lexington-Fayette Urban County Government (LFUCG) on the West Hickman WWTP Final Clarifier No. 7 and No. 8 Structural Repairs October 16, 2018. Opportunities exist for the following trades: Electrical, Seeding, Misc. Fabricated Metals and Reelsteel Installation. Subcontractors should contact Clinton Jones in our office at (859) 234-6800 to get information on plans and specifications. Minorities are encouraged to apply.

**AN EQUAL OPPORTUNITY ORGANIZATION**

0003876968-01

**Mary Coy**

---

**From:** LEX Herald-Leader Legal Ads <hllegalads@herald-leader.com>  
**Sent:** Thursday, September 27, 2018 4:31 PM  
**To:** LEX Herald-Leader Legal Ads  
**Cc:** Jeanie Anness; Mary Coy  
**Subject:** Re: West Hickman WWTP Final Clarifier Repairs

Thank you for confirming.

On Thursday, September 27, 2018 at 4:30:38 PM UTC-4, Mary Coy wrote:

Please run the ad.

Thank you

**From:** LEX Herald-Leader Legal Ads [mailto:[hllegalads@herald-leader.com](mailto:hllegalads@herald-leader.com)]  
**Sent:** Thursday, September 27, 2018 4:11 PM  
**To:** LEX Herald-Leader Legal Ads  
**Cc:** Jeanie Anness; Mary Coy  
**Subject:** Re: West Hickman WWTP Final Clarifier Repairs

Attached is the proof and cost of the ad scheduled to run on Sat., 9/29/18. Please confirm before 10:00 am tomorrow morning, Fri., 9/28/18 if the ad is approved to run as scheduled.

Thank you.

On Thursday, September 27, 2018 at 3:42:31 PM UTC-4, Mary Coy wrote:

Please run this in the next available edition.

Call with any questions.

Thank you,

# Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

## Bid Bond

### CONTRACTOR:

(Name, legal status and address)

Judy Construction Company  
103 S Church Street  
Cynthiana, KY 41031

### SURETY:

(Name, legal status and principal place of business)

Continental Casualty Company  
151 N. Franklin Street  
Chicago, IL 60606  
Mailing Address for Notices

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

### OWNER:

(Name, legal status and address)

Lexington Fayette Urban County Government  
200 E. Main Street  
Lexington, KY 40507

BOND AMOUNT: 5% Five Percent of Amount Bid

### PROJECT:

(Name, location or address, and Project number, if any)

West Hickman WWTP Final Clarifiers # 7 and #8 - Structural Repairs - Bid No. 130-2018

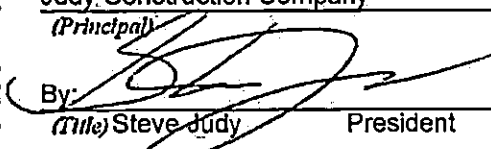
The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

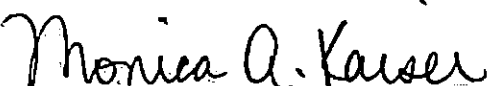
If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.


When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

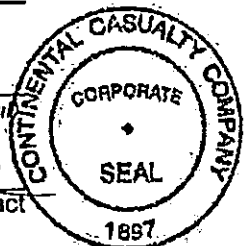
Signed and sealed this 19th day of October, 2018

  
\_\_\_\_\_  
(Witness) James K. Cowley, Secretary-Treasurer

Judy Construction Company  
\_\_\_\_\_  
(Principal) (Seal)  
By:   
\_\_\_\_\_  
(Title) Steve Judy, President

  
\_\_\_\_\_  
(Witness) Monica A. Kaiser

Continental Casualty Company  
\_\_\_\_\_  
(Surety) (Seal)  
By:   
\_\_\_\_\_  
(Title) Paula J. Teague, Attorney-in-Fact



POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company (herein called "the CNA Companies"), are duly organized and existing insurance companies having their principal offices in the City of Chicago, and State of Illinois, and that they do by virtue of the signatures and seals herein affixed hereby make, constitute and appoint

Paula J. Teague, Individually

of Louisville, KY their true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on their behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

Surety Bond No.: Bid Bond
Principal: Judy Construction Company
Obligee: Lexington Fayette Urban County Government

and to bind them thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of their insurance companies and all the acts of said Attorney, pursuant to the authority hereby given is hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law and Resolutions, printed on the reverse hereof, duly adopted, as indicated, by the Boards of Directors of the insurance companies.

In Witness Whereof, the CNA Companies have caused these presents to be signed by their Vice President and their corporate seals to be hereto affixed on this 27th day of February, 2018.



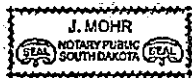
Continental Casualty Company
National Fire Insurance Company of Hartford
American Casualty Company of Reading, Pennsylvania

Handwritten signature of Paul T. Bruflat

Paul T. Bruflat Vice President

State of South Dakota, County of Minnehaha, ss:

On this 27th day of February, 2018, before me personally came Paul T. Bruflat to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company described in and which executed the above instrument; that he knows the seals of said insurance companies; that the seals affixed to the said instrument are such corporate seals; that they were so affixed pursuant to authority given by the Boards of Directors of said insurance companies and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said insurance companies.



My Commission Expires June 23, 2021

Handwritten signature of J. Mohr

J. Mohr Notary Public

CERTIFICATE

I, D. Johnson, Assistant Secretary of Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company do hereby certify that the Power of Attorney herein above set forth is still in force, and further certify that the By-Law and Resolution of the Board of Directors of the insurance companies printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said insurance companies this 19th day of October, 2018



Continental Casualty Company
National Fire Insurance Company of Hartford
American Casualty Company of Reading, Pennsylvania

Handwritten signature of D. Johnson

D. Johnson Assistant Secretary

Form F6853-4/2012

Go to www.cnasurety.com > Owner / Obligee Services > Validate Bond Coverage, if you want to verify bond authenticity.

## Authorizing By-Laws and Resolutions

### ADOPTED BY THE BOARD OF DIRECTORS OF CONTINENTAL CASUALTY COMPANY:

This Power of Attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the Board of Directors of the Company at a meeting held on May 12, 1995:

**"RESOLVED:** That any Senior or Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Senior or Group Vice President to the Secretary of the Company prior to such execution becoming effective."

This Power of Attorney is signed by Paul T. Bruffat, Vice President, who has been authorized pursuant to the above resolution to execute power of attorneys on behalf of Continental Casualty Company.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012:

"Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the "Authorized Officers") to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, "Electronic Signatures"); Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company. "

### ADOPTED BY THE BOARD OF DIRECTORS OF NATIONAL FIRE INSURANCE COMPANY OF HARTFORD:

This Power of Attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the Board of Directors of the Company by unanimous written consent dated May 10, 1995:

**"RESOLVED:** That any Senior or Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Senior or Group Vice President to the Secretary of the Company prior to such execution becoming effective."

This Power of Attorney is signed by Paul T. Bruffat, Vice President, who has been authorized pursuant to the above resolution to execute power of attorneys on behalf of National Fire Insurance Company of Hartford.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012:

"Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the "Authorized Officers") to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, "Electronic Signatures"); Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company. "

### ADOPTED BY THE BOARD OF DIRECTORS OF AMERICAN CASUALTY COMPANY OF READING, PENNSYLVANIA:

This Power of Attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the Board of Directors of the Company by unanimous written consent dated May 10, 1995:

**"RESOLVED:** That any Senior or Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Senior or Group Vice President to the Secretary of the Company prior to such execution becoming effective."

This Power of Attorney is signed by Paul T. Bruffat, Vice President, who has been authorized pursuant to the above resolution to execute power of attorneys on behalf of American Casualty Company of Reading, Pennsylvania.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012:

"Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the "Authorized Officers") to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, "Electronic Signatures"); Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company. "



**PART IV**  
**GENERAL CONDITIONS**  
**TABLE OF CONTENTS**

Article Number	Title	Page
1.	DEFINITIONS.....	GC-6
2.	PRELIMINARY MATTERS.....	GC-9
3.	CONTRACT DOCUMENTS: INTENT, CONFLICTS, AMENDING AND REUSE.....	GC-11
4.	AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS.....	GC-12
5.	CONTRACTOR'S RESPONSIBILITIES.....	GC-15
6.	OTHER WORK.....	GC-24
7.	OWNER'S RESPONSIBILITIES.....	GC-25
8.	ENGINEER'S STATUS DURING CONSTRUCTION.....	GC-26
9.	CHANGES IN THE WORK.....	GC-28
10.	CHANGE OF CONTRACT PRICE.....	GC-29
11.	CHANGE OF CONTRACT TIME.....	GC-35
12.	WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK.....	GC-36
13.	PAYMENTS TO CONTRACTOR AND COMPLETION.....	GC-39
14.	SUSPENSION OF WORK AND TERMINATION.....	GC-42
15.	MISCELLANEOUS.....	GC-45

## DETAILED TABLE OF CONTENTS OF GENERAL CONDITIONS

1. Definitions
2. Preliminary Matters
  - 2.1 Delivery of Bonds
  - 2.2 Copies of Documents
  - 2.3 Commencement of Contract Time; Notice to Proceed
  - 2.4 Starting the Project
  - 2.5 Before Starting Construction
  - 2.6 Submittal of Schedules
  - 2.7 Preconstruction Conference
  - 2.8 Finalizing Schedules
3. Contract Documents, Intent, Conflicts, Amending, and Reuse
  - 3.1 General
  - 3.2 Intent
  - 3.3 Conflicts
  - 3.4 Amending and Supplementing Contract Documents
  - 3.5 Reuse of Documents
4. Availability of Lands, Physical Conditions, Reference Points
  - 4.1 Availability of Lands
  - 4.2 Physical Conditions
  - 4.3 Physical Conditions - Underground Facilities
  - 4.4 Reference Points
5. CONTRACTOR'S Responsibilities
  - 5.1 Supervision
  - 5.2 Superintendence
  - 5.3 General Manager
  - 5.4 Labor
  - 5.5 Start-Up and Completion of Work
  - 5.6 Materials and Equipment
  - 5.7 Adjusting Progress Schedule
  - 5.8 Substitutes or "Or-Equal" Items
  - 5.9 Subcontractors, Suppliers and Others
  - 5.10 Patent Fees and Royalties
  - 5.11 Permits
  - 5.12 Laws and Regulations
  - 5.13 Taxes
  - 5.14 Use of Premises
  - 5.15 Record Drawings
  - 5.16 Shop Drawings and Samples
  - 5.17 Continuing the Work
  - 5.18 Erosion and Sediment Control

6. Other Work
  - 6.1 Related Work at Site
  - 6.2 Other Contractors or Utility Owners
  - 6.3 Delays Caused By Others
  - 6.4 Coordination
  
7. OWNER'S Responsibilities
  - 7.1 Communications
  - 7.2 Data and Payments
  - 7.3 Lands, Easements, and Surveys
  - 7.4 Change Orders
  - 7.5 Inspections, Tests, and Approvals
  - 7.6 Stop or Suspend Work
  
8. ENGINEER'S Status During Construction
  - 8.1 OWNER'S Representative
  - 8.2 Visits to Site
  - 8.3 Project Representation
  - 8.4 Clarification and Interpretations
  - 8.5 Authorized Variations in Work
  - 8.6 Rejecting Defective Work
  - 8.7 Shop Drawings
  - 8.8 Change Orders
  - 8.9 Payments
  - 8.10 Determinations for Unit Prices
  - 8.11 Decisions on Disputes
  - 8.12 Limitations on ENGINEER'S Responsibilities
  
9. Changes in the Work
  - 9.1 OWNER May Order Changes
  - 9.2 Claims
  - 9.3 Work Not in Contract Documents
  - 9.4 Change Orders
  - 9.5 Notice of Change
  
10. Change of Contract Price
  - 10.1 Total Compensation
  - 10.2 Claim for Increase or Decrease in Price
  - 10.3 Value of Work
  - 10.4 Cost of the Work
  - 10.5 Not to Be Included in Cost of the Work
  - 10.6 CONTRACTOR'S Fee
  - 10.7 Itemized Cost Breakdown
  - 10.8 Cash Allowance
  - 10.9 Unit Price Work

11. Change of Contract Time
  - 11.1 Change Order
  - 11.2 Justification for Time Extension
  - 11.3 Time Limits
  
12. Warranty and Guarantee; Tests and Inspections; Correction, Removal or Acceptance of Defective Work
  - 12.1 Warranty and Guarantee
  - 12.2 Access to Work
  - 12.3 Tests and Inspections
  - 12.4 OWNER May Stop Work
  - 12.5 Correction or Removal of Defective Work
  - 12.6 One Year Correction Period
  - 12.7 Acceptance of Defective work
  - 12.8 Owner May Correct Defective Work
  
13. Payments to CONTRACTOR and Completion
  - 13.1 Schedule of Values
  - 13.2 Application for Progress Payments
  - 13.3 CONTRACTOR'S Warranty of Title
  - 13.4 Review of Application for Progress Payments
  - 13.5 Partial Utilization
  - 13.6 Final Inspection
  - 13.7 Final Application for Payment
  - 13.8 Final Payment and Acceptance
  - 13.9 CONTRACTOR'S Continuing Obligation
  - 13.10 Waiver of Claims
  
14. Suspension of Work and Termination
  - 14.1 OWNER May Suspend Work
  - 14.2 OWNER May Terminate
  - 14.3 CONTRACTOR'S Services Terminated
  - 14.4 Payment After Termination
  - 14.5 CONTRACTOR May Stop or Terminate
  
15. Miscellaneous
  - 15.1 Claims for Injury or Damage
  - 15.2 Non-Discrimination in Employment
  - 15.3 Temporary Street Closing or Blockage
  - 15.4 Percentage of Work Performed by Prime CONTRACTOR
  - 15.5 Clean-up
  - 15.6 General
  - 15.7 Debris Disposal

## PART IV

### GENERAL CONDITIONS

#### 1. DEFINITIONS

Wherever used in these General Conditions or the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof.

##### 1.1 Addenda

Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bid Documents or the Contract Documents.

##### 1.2 Agreement

The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

##### 1.3 Application for Payment

The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

##### 1.4 Bid

The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

##### 1.5 Bidder

An individual, partnership, or corporation, who submit a Bid for a prime Contract with the OWNER, for the Work described in the proposed Contract Documents.

##### 1.6 Bonds

Bid, performance and payment bonds and other instruments of security.

##### 1.7 Calendar Day

A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

##### 1.8 Change Order

A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

##### 1.9 Contract Documents

The Advertisement for Bidders, Information for Bidders, Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Special Conditions, the Specifications and the Drawings as the same

are more specifically identified in the Agreement, together with all amendments, modifications and supplements.

**1.10 Contract Unit Price**

The monies payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement. Unit Prices are to be firm for the term of this Contract.

**1.11 Contract Time**

The number of consecutive calendar days between the date of issuance of the Notice to Proceed and the Contract completion date.

**1.12 CONTRACTOR**

The person, firm or corporation with whom OWNER has entered into the Agreement.

**1.13 Defective**

An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER'S recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER).

**1.14 Drawings**

The Drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

**1.15 Effective Date of the Agreement**

The date indicated in the Agreement on which it becomes effective.

**1.16 ENGINEER**

The Lexington-Fayette Urban County Government Division of Water Quality or its authorized representative.

**1.17 Field Order**

A documented order issued by ENGINEER which orders minor changes in the Work, but which does not involve a change in the Contract Price or the Contract Time.

**1.18 Giving Notice**

Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

**1.19 Laws and Regulations**

Laws, rules, regulations, ordinances, codes and/or orders.

**1.20 Notice of Award**

The written notice by OWNER to the apparent successful Bidder stating that upon compliance by the apparent successful Bidder with the conditions enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

- 1.21 Notice to Proceed**  
A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.
- 1.22 OWNER**  
The Lexington-Fayette Urban County Government.
- 1.23 Partial Utilization**  
Placing a portion of the Work in service for the purpose for which it is intended (or related purpose) before reaching Completion for all the Work.
- 1.24 Project**  
The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.
- 1.25 Inspector**  
The authorized representative of the ENGINEER who is assigned to the site or any part thereof.
- 1.26 Shop Drawings**  
All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.
- 1.27 Specifications**  
Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.
- 1.28 Standard Specifications**  
The "Standard Specifications for Road and Bridge Construction", Transportation Cabinet, Department of Highways, Commonwealth of Kentucky, current edition. MUTCD shall refer to the "Manual of Uniform Traffic Control Devices.
- 1.29 Subcontractor**  
An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.
- 1.30 Special Conditions**  
The part of the Contract Documents which amends or supplements these General Conditions.
- 1.31 Supplier**  
A manufacturer, fabricator, supplier, distributor, materialman or vendor.
- 1.32 Underground Facilities**  
All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which

have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

**1.33 Unit Price Work**

Not applicable

**1.34 Work**

The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

**1.35 Time Period**

When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

**2. PRELIMINARY MATTERS**

**2.1 Delivery of Bonds**

When the CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER, such Bonds, Insurance Certificate, and Power of Attorney as CONTRACTOR may be required to furnish.

**2.2 Copies of Documents**

Owner shall furnish to CONTRACTOR up to three copies (unless otherwise specified in the Special Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

**2.3 Commencement of Contract Time; Notice to Proceed**

The Contract Time will commence to run on the day specified in the Notice to Proceed.

**2.4 Starting the Project**

CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

**2.5 Before Starting Construction**

Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or



discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

**2.6 Submittal of Schedules**

Within ten days after the effective date of the Agreement (unless otherwise specified) CONTRACTOR shall submit to ENGINEER for review:

2.6.1 an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2 a preliminary schedule of Shop Drawing submissions; and

2.6.3 a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

**2.7 Preconstruction Conference**

Before CONTRACTOR starts the Work at the proposed site, a conference attended by CONTRACTOR, ENGINEER, EEO-Affirmative Action Officer, and other appropriate parties will be held to discuss the following issues: (1) The scheduling of the Work to be completed; (2) The procedures for handling shop drawings and other submittals; (3) The processing of applications for payment; (4) The establishment of an understanding among the involved parties in regard to the proposed project; and (5) The establishment of procedures for effectively implementing the LFUCG's 10% minimum DBE goals.

**2.8 Finalizing Schedules**

At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility thereof. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

**3. CONTRACT DOCUMENTS: INTENT, CONFLICTS, AMENDING AND REUSE**

**3.1 General**

The Contract Documents comprise the entire Agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

### **3.2 Intent**

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 8.4.

### **3.3 Conflicts**

If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in the following order:

1. Agreement
2. Field and Change Orders
3. Addenda
4. Special Conditions
5. Instruction to Bidders
6. General Conditions
7. Specifications and Drawings

Figure dimension on drawings shall govern over scale dimensions and detailed Drawings shall govern over general Drawings.

### **3.4 Amending and Supplementing Contract Documents**

The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof by means of a Change Order or a Field Order. Contract Price and Contract Time may only be changed by a Change Order.

### **3.5 Reuse of Documents**

Neither CONTRACTOR nor any subcontractor or supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

## **4. AVAILABILITY OF LANDS; PHYSICAL CONDITIONS, REFERENCE POINTS**

### **4.1 Availability of Lands**

OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER'S furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11. ENGINEER shall determine if the claim is legitimate or not. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

### **4.2 Physical Conditions**

#### **4.2.1 Explorations and Reports**

Reference is made to the Special Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

#### **4.2.2 Existing Structures**

Reference is made to the Special Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3 which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3 Report of Differing Conditions

If CONTRACTOR believes that:

4.2.3.1 any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2 any physical conditions uncovered or revealed at the site differ materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing and WORK in connection therewith (except in an emergency) notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4 ENGINEER'S Review

Engineer will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise CONTRACTOR of ENGINEER'S findings and conclusions.

4.2.5 Possible Document Change

If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change to the Contract Documents is required, a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6 Possible Price and Time Adjustments

In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference.

**4.3 Physical Conditions-Underground Facilities**

4.3.1 Shown or Indicated

The information and data shown or indicated in the Contract Documents with respect to existing underground facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such underground facilities or by others. Unless it is otherwise expressly provided in the Special Conditions:

4.3.1.1 OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.2.1.2 CONTRACTOR shall have full responsibility for reviewing and checking all such information and data; for locating all underground facilities shown or indicated in the Contract Documents; for coordination of the Work with the owners of such underground facilities during construction; and for the safety and protection thereof

and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

**4.3.2 Not Shown or Indicated**

If an underground facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency), identify the owner of such underground facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the underground facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the underground facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such underground facility. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any underground facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of.

**4.4 Reference Points**

OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER'S judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by a Registered Land Surveyor.

**5. CONTRACTOR'S RESPONSIBILITIES**

**5.1 Supervision**

CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall assure that all CONTRACTOR personnel (including subcontractors, etc.) conduct themselves in a courteous and respectful manner toward the ENGINEER and the general public. Failure to comply with this condition of the Contract will result in immediate suspension of the Work. Following a review by the Commissioner of Public Works, the Contract may be terminated (see GC section 14). CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

**5.2 Superintendence**

CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR'S representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

**5.3 General Manager**

CONTRACTOR shall keep at all times during Contract progress a COMPETENT General Manager, who shall not be replaced without written notice to OWNER except under extraordinary circumstances. Owner must approve this person. Owner may request removal and replacement of General Manager at any time. If so, Contractor shall have thirty (30) days to make replacement. The General Manager will be CONTRACTOR'S main representative for all technical, billing, data management, subcontractor coordination, and complaint resolutions and shall have authority to act on behalf of CONTRACTOR. The General Manager shall spend a minimum of eighty (80) percent of their time in the office. All communications given to the General Manager shall be as binding as if given to CONTRACTOR.

**5.4 Labor**

CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER'S written consent given after prior written notice to ENGINEER.

**5.5 Start-Up and Completion of Work**

Unless otherwise specified, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

**5.6 Materials and Equipment**

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

**5.6.1 Not Clearly Specified or Indicated**

In all instances where materials specified are obtainable in different sizes, weights, trade grades, qualities or finishes, etc., whose weights, trade grades, qualities or finishes, etc., are not clearly specified or indicated on the Drawings, the CONTRACTOR shall notify the ENGINEER of all such instances at least five (5) days in advance of receiving the proposals. The Engineer will then determine which size, weight, trade grade, quality, finish, etc., is required.

**5.6.2 Coordination of Work**

The CONTRACTOR shall see that for his own Work and for the work of each subcontractor, proper templates and patterns necessary for the coordination of the various parts of the Work are prepared. The CONTRACTOR shall furnish or require the subcontractor to furnish such duplicates as will enable the subcontractors to fit together and execute fully their respective portions of the Work.

**5.7 Adjusting Progress Schedule**

CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.8) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the Contract Documents applicable thereto.

**5.8 Substitutes or "Or-Equal" Items**

**5.8.1 General**

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other suppliers may be accepted by OWNER/ENGINEER if sufficient information is submitted by CONTRACTOR to allow OWNER/ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by OWNER/ENGINEER will include the following. Requests for review of substitute items of material and equipment will not be accepted by OWNER/ENGINEER from anyone, other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to OWNER/ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified

in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by OWNER/ENGINEER in evaluating the proposed substitute. OWNER/ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

**5.8.2 Substitutes**

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to OWNER/ENGINEER, if CONTRACTOR submits sufficient information to allow OWNER/ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by OWNER/ENGINEER will be similar to that provided in paragraph 5.7.1 as applied by OWNER/ENGINEER.

**5.8.3 OWNER/ENGINEER'S Approval**

OWNER/ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. OWNER/ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without OWNER/ENGINEER'S prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute. OWNER/ENGINEER will record time required by OWNER/ENGINEER and OWNER/ENGINEER'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not OWNER/ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of OWNER/ENGINEER and OWNER/ENGINEER'S consultants for evaluating each proposed substitute.

**5.9 Subcontractors, Suppliers, and Others**

**5.9.1 Acceptable to ENGINEER**

CONTRACTOR shall not employ any subcontractor, supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 5.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any subcontractor, supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

**5.9.2 Objection After Due Investigation**

If the Contract Documents require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to



OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof, OWNER'S or ENGINEER'S acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such subcontractor, supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

5.9.3 Contractor Responsible for Acts of Subcontractors

The CONTRACTOR shall perform on the site, and with its own organization, work equivalent to at least fifty (50) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the Owner determines that the reduction would be to the advantage of the Urban County Government.

The CONTRACTOR shall, at the time he submits his proposal for the Contract, notify the OWNER in writing of the names of subcontractors proposed for the Work. He shall not employ any subcontractor without the prior written approval of the OWNER.

CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such subcontractor, supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such subcontractor, supplier or other person or organization except as may otherwise be required by Laws and Regulations.

5.9.4 Division of Specifications

The divisions and sections of the Specifications and the identifications of any drawings shall not control CONTRACTOR in dividing the Work among subcontractors or suppliers or delineating the Work to be performed by any specific trade.

5.9.5 Agreement Between Contractor and Subcontractors

All Work performed for CONTRACTOR by a subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER.

**5.9.6 Statements and Comments by CONTRACTOR**

Neither the CONTRACTOR, his employees, nor his subcontractors shall at any time make any statement or comment as to the project scope, nature, intention, design, or construction method to any third party or parties without the explicit written consent of the OWNER.

Any third party requesting such information shall be referred to the OWNER or his representative.

Should there be any change from the original intent of the project as a result of any statement or comment by the Contractor, his employees or subcontractors, Contractor shall be held liable for any change in the scope, nature, design, or construction method and shall bear the full cost for the previously mentioned changes.

**5.10 Patent Fees and Royalties**

CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others.

**5.11 Permits**

Unless otherwise provided in the Special conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

**5.12 Laws and Regulations**

**5.12.1 CONTRACTOR to Comply**

CONTRACTOR shall give all notices and comply with all laws and regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable laws and regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR'S compliance with any laws and regulations.

**5.12.2 Specifications and Drawings at Variance**

If CONTRACTOR observes that the Specifications or Drawings are at variance with any laws or regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such laws, or regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR'S primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws and regulations.

**5.13 Taxes**

CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. Any party, firm or individual submitting a proposal pursuant to invitation must have paid all taxes owed to the Lexington-Fayette Urban County Government at the time the Bid is submitted, and must maintain a "current" status in regard to those taxes throughout the Contract. If applicable, business must be licensed in Fayette County.

**5.14 Use of Premises**

**5.14.1 Project Site**

CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the staging areas or work site areas identified in and permitted by the Contract Documents and other land and areas permitted by laws and regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by laws and regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR'S performance of the Work.

**5.14.2 Clean UP**

During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

**5.14.3 Loading of Structures**

CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

**5.15 Record Drawings**

CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Field Orders and written

interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

## 5.16 Shop Drawings and Samples

### 5.16.1 Shop Drawing Submittals

After checking and verifying all field measurements and after complying with applicable procedures specified, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.8), or for other appropriate action if so indicated in the Special Conditions, five copies (unless otherwise specified) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

### 5.16.2 Sample Submittals

CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which intended.

### 5.16.3 Review by CONTRACTOR

Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

### 5.16.4 Notice of Variation

At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

### 5.16.5 ENGINEER'S Approval

ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER'S review and approval will be only for conformance with the design concept of the Project and for compliance

with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit, as required, new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

**5.16.6 Responsibility for Errors and Omissions**

ENGINEER'S review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER'S attention to each such variation at the time of submission as required by paragraph 5.15.4 and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 5.15.3.

**5.16.7 Cost of Related Work**

Where a Shop or sample is required by the Specifications, any related Work performed prior to ENGINEER'S review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

**5.17 Continuing the Work**

CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolutions of any disputes or disagreements, except as permitted by paragraph 14.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

**5.18 Erosion and Sediment Control**

**5.18.1 General Environmental Requirements**

The CONTRACTOR and subcontractors performing work on projects on behalf of the OWNER shall comply with all applicable federal, state, and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits.

Any fines or penalties resulting from the failure to comply with the terms of the federal, state or local permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

5.18.2 Stormwater Pollution Prevention

A. The CONTRACTOR shall exercise due care to prevent or minimize any damage to any stream or wetland from pollution by debris, sediment or other material. The operation of equipment and/or materials in a jurisdictional wetland is expressly prohibited. Water that has been used for washing or processing, or that contains oils, sediments or other pollutants shall not be discharged from the job site. Such waters shall be collected and properly disposed of by the CONTRACTOR in accordance with applicable local, state and federal law.

B. The CONTRACTOR is solely responsible for securing all required state and local permits associated with stormwater discharges from the project including, but not necessarily limited to the KY Notice of Intent to Disturb (NOI) for Coverage of Storm Water Discharges Associated with Construction Activities under the KPDES Storm Water General Permit KYR100000 and the LFUCG, Land Disturbance Permit. Permit application preparation and all required documentation are the responsibility of the CONTRACTOR. The CONTRACTOR is solely responsible for maintaining compliance with the stormwater pollution prevention plan or erosion and sediment control plan and ensuring the following:

1. That the Stormwater Pollution Prevention Plan (SWPPP) or erosion control plan (ECP) is current and available for review on site;
2. That any and all stormwater inspection reports required by the permit are conducted by qualified personnel and are available for review onsite; and
3. That all best management practices (BMPs) are adequately maintained and effective at controlling erosion and preventing sediment from leaving the site.

C. The CONTRACTOR shall provide the necessary equipment and personnel to perform any and all emergency measures that may be required to contain any spillage or leakage and to remove materials, soils or liquids that become contaminated. The collected spill material shall be properly disposed at the CONTRACTOR's expense.

D. Upon completion of the Work and with the concurrence of the OWNER, the CONTRACTOR must file a Notice of Termination (NOT) of Coverage Under the KPDES General Permit for Storm Water Discharges Associated with Construction Activity with the appropriate local and state authorities.

E. Any fines or penalties resulting from the failure to comply with the terms of the state or local stormwater permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

**6. OTHER WORK**

**6.1 Related Work at Site**

OWNER may perform other work related to the Project at the site by OWNER'S own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice

thereof will be given to CONTRACTOR prior to starting any such other work; and, if such performance will involve additional expense to CONTRACTOR or requires additional time, a Change Order to the Contract will be negotiated.

**6.2 Other Contractors or Utility Owners**

CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER'S employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

**6.3 Delays Caused by Others**

If any part of CONTRACTOR'S Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR'S failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR'S Work except for latent or non-apparent defects and deficiencies in the other work.

**6.4 Coordination**

If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Special Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Special Conditions.

**7. OWNER'S RESPONSIBILITIES**

**7.1 Communications**

OWNER shall issue all communications to CONTRACTOR through ENGINEER.

**7.2 Data and Payments**

OWNER shall furnish the data required of OWNER under the Contract Documents promptly after they are due.

**7.3 Lands, Easements, and Surveys**

OWNER'S duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER'S identifying and making available to

CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

**7.4 Change Orders**

OWNER is obligated to execute Change Orders as indicated in paragraph 9.4.

**7.5 Inspections, Tests and Approvals**

OWNER'S responsibility in respect to certain inspections, tests and approvals is set forth in paragraph 13.3.

**7.6 Stop or Suspend Work**

In connection with OWNER'S right to stop Work or suspend Work, see paragraph 12.4 and 14.1 Paragraph 14.2 deals with OWNER'S rights to terminate services of CONTRACTOR under certain circumstances.

**8. ENGINEER'S STATUS DURING CONSTRUCTION**

**8.1 OWNER'S Representative**

ENGINEER will be OWNER'S representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER'S representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

**8.2 Visits to Site**

ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER'S efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

**8.3 Project Representation**

ENGINEER will provide an Inspector to assist ENGINEER in observing the performance of the Work. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER'S agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Special Conditions.

**8.4 Clarifications and Interpretations**

ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.



**8.5 Authorized Variations in Work**

ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order.

**8.6 Rejecting Defective Work**

ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 12.3, whether or not the Work is fabricated, installed or completed.

**8.7 Shop Drawings**

In connection with ENGINEER'S responsibility for Shop Drawings and samples, see paragraphs 5.15.1 through 5.16 inclusive.

**8.8 Change Orders**

In connection with ENGINEER'S responsibilities as to Change Orders, see Articles 10, 11 and 12.

**8.9 Payments**

In connection with ENGINEER'S responsibilities with respect to Applications for Payment, etc., see Article 13.

**8.10 Determinations for Unit Prices**

ENGINEER will determine the actual quantities and classifications of unit price work performed by CONTRACTOR.

ENGINEER will review with CONTRACTOR ENGINEER'S preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise).

**8.11 Decision on Disputes**

ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 10 and 11 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

## **8.12 Limitations on Engineer's Responsibilities**

### **8.12.1 CONTRACTOR, Supplier, or Surety**

Neither ENGINEER'S authority to act under this Article 8 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any subcontractor, any supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

### **8.12.2 To Evaluate the Work**

Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives or like "effect" or "import" are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

### **8.12.3 CONTRACTOR'S Means, Methods, Etc.**

ENGINEER will not be responsible for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR'S failure to perform or furnish the Work in accordance with the Contract Documents.

### **8.12.4 Acts of Omissions of CONTRACTOR**

ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any subcontractor, any supplier, or of any other person or organization performing or furnishing any of the Work.

## **9. CHANGES IN THE WORK**

### **9.1 OWNER May Order Change**

Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Change Order. Upon receipt of such notice, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

### **9.2 Claims**

Claims for an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Change Order will be settled as provided for in Article 10 or Article 11.

**9.3 Work Not in Contract Documents**

CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraph 3.4, except in the case of an emergency and except in the case of uncovering Work as provided in paragraph 12.3.4.

**9.4 Change Orders**

OWNER and CONTRACTOR shall execute appropriate Change Orders covering:

9.4.1 changes in the Work which are ordered by OWNER pursuant to paragraph 9.1, are required because of acceptance of defective Work under paragraph 12.7 or corrective defective Work under paragraph 12.8, or are agreed to by the parties;

9.4.2 changes in the Contract Price or Contract Time which are agreed to by the parties; and

9.4.3 changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 8.11; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable laws and regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 5.16.

**9.5 Notice of Change**

If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be CONTRACTOR'S responsibility, and the amount of each applicable bond will be adjusted accordingly.

**10. CHANGE OF CONTRACT PRICE**

**10.1 Total Compensation**

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

**10.2 Claim for Increase or Decrease in Price**

The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by CONTRACTOR'S written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of said event.

### **10.3 Value of Work**

The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

#### **10.3.1 Unit Prices**

Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 10.9.1. through 10.9.3, inclusive).

#### **10.3.2 Lump Sum**

By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 10.6.2.1).

#### **10.3.3 Cost Plus Fee**

On the basis of the Cost of the Work (determined as provided in paragraphs 10.4 and 10.5) plus a CONTRACTOR'S fee for overhead and profit (determined as provided in paragraphs 10.6 and 10.7).

### **10.4 Cost of the Work**

The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project; shall include only the following items; and shall not include any of the costs itemized in paragraph 10.5:

#### **10.4.1 Payroll Costs**

Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

#### **10.4.2 Materials and Equipment Costs**

Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

#### **10.4.3 Subcontractor Costs**

Payments made by CONTRACTOR to the subcontractors for Work performed by subcontractors. If required by OWNER, CONTRACTOR shall

obtain competitive bids from subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a subcontract provides that the subcontractor is to be paid on the basis of cost of the work plus a fee, the subcontractor's cost of the Work shall be determined in the same manner as CONTRACTOR'S cost of the work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

10.4.4 Special Consultant Costs

Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

10.4.5 Supplemental Costs

10.4.5.1 The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR'S employees incurred in discharge of duties connected with the Work.

10.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

10.4.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal shall be in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

10.4.5.4 Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by laws and regulations.

10.4.5.5 Deposits lost for causes other than negligence of CONTRACTOR, any subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

10.4.5.6 Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER), provided they have resulted from causes other than the negligence of CONTRACTOR, any subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written

consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR'S fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid a fee proportionate to that stated in paragraph 10.6.2 for services.

10.4.5.7 The cost of utilities, fuel and sanitary facilities at the site.

10.4.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

10.4.5.9 Cost of premiums for additional bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER.

**10.5 Not to Be Included in Cost of the Work**

The term cost of the work shall not include any of the following:

**10.5.1 Costs of Officers and Executives**

Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR'S principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 10.4.1 or specifically covered by paragraph 10.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR'S fee.

**10.5.2 Principal Office**

Expenses of CONTRACTOR'S principal and branch offices other than CONTRACTOR'S office at the site.

**10.5.3 Capital Expense**

Any part of CONTRACTOR'S capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR for delinquent payments.

**10.5.4 Bonds and Insurance**

Cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.9 above).

**10.5.5 Costs Due to Negligence**

Costs due to the negligence of CONTRACTOR, any subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work,

disposal of materials or equipment wrongly supplied and making good any damage to property.

**10.5.6 Other Costs**

Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

**10.6 Contractor's Fee**

The CONTRACTOR'S Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

10.6.1 a mutually acceptable fixed fee; or if none can be agreed upon,

10.6.2 a fee based on the following percentages of the various portions of the cost of the work:

10.6.2.1 for costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR'S fee shall be fifteen percent;

10.6.2.2 for costs incurred under paragraph 10.4.3, the CONTRACTOR'S fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all subcontractors shall be fifteen percent;

10.6.2.3 no fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;

10.6.2.4 the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR'S Fee by an amount equal to ten percent of the net decrease; and

10.6.2.5 when both additions and credits are involved in any one change, the adjustment in CONTRACTOR'S fee shall be computed on the basis of the net change in accordance with paragraphs 10.6.2.1 through 10.6.2.4, inclusive.

**10.7 Itemized Cost Breakdown**

Whenever the cost of any Work is to be determined pursuant to paragraph 10.4 or 10.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

**10.8 Cash Allowances**

It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such subcontractors or suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER, CONTRACTOR agrees that:

**10.8.1 Materials and Equipment**

The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

**10.8.2 Other Costs**

CONTRACTOR'S costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

**10.8.3 Change Order**

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

**10.9 Unit Price Work**

**10.9.1 General**

Where the Contract Documents provide that all or part of the Work is to be unit price work, initially the Contract Price will be deemed to include for all unit price work an amount equal to the sum of the established unit prices for each separately identified item of unit price work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of unit price work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of unit price work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 8.10.

**10.9.2 Overhead and Profit**

Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR'S overhead and profit for each separately identified item.

**10.9.3 Claim for Increase in Unit Price**

Where the quantity of any item of unit price work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 10.

**11. CHANGE OF CONTRACT TIME**

**11.1 Change Order**

The Contract Time may only be changed by a Change Order. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of



the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER in accordance with paragraph 8.11. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 11.1.

**11.2 Justification for Time Extensions**

The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefore as provided in paragraph 11.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 6, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

**11.3 Time Limits**

All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 11 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either party.

**12. WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

**12.1 Warranty and Guarantee**

CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be defective. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 12.

**12.2 Access to Work**

ENGINEER and ENGINEER'S representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

**12.3 Tests and Inspections**

**12.3.1 Timely Notice**

CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

**12.3.2 Requirements and Responsibilities**

The ENGINEER may require such inspection and testing during the course of the Work as he/she deems necessary to ascertain and assure the integrity and acceptable quality of the materials incorporated and the work performed. Inspection presence may be either full-time or intermittent, and neither the presence nor absence at any time of the ENGINEER or the INSPECTOR

shall relieve the CONTRACTOR of sole responsibility for the acceptability and integrity of the Work or any part thereof.

The costs of sampling, testing, and inspection on-site to ascertain acceptability of the Work and materials will be borne by the OWNER except as otherwise provided. The OWNER will select a testing laboratory to perform such sampling and testing. Sampling and/or testing required by the CONTRACTOR or necessitated by failure of Work or materials to meet the above acceptability test shall be at the expense of the CONTRACTOR.

Inspection services may be performed by the employees of the OWNER or by others selected or designated by the OWNER or the ENGINEER.

Sampling and/or testing required for manufacturing quality and/or process control, for certification that raw mineral materials or manufactured products are the quality specified in the Contract, or to assure the acceptability for incorporation into the Work shall be borne by the CONTRACTOR or the material supplier.

Cost for inspection, sampling, testing, and approvals required by the laws or regulations of any public body having competent jurisdiction shall be borne by the CONTRACTOR or the material supplier.

Sampling and testing will be in accord with pertinent codes and regulations and with appropriate standards of the American Society of Testing Materials (ASTM) or other specified standards.

**12.3.3 On-Site Construction Test and Other Testing**

All inspections, tests or approvals other than those required by laws or regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

**12.3.4 Covered Work**

If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR'S expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR'S intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

**12.3.5 CONTRACTOR'S Obligation**

Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR'S obligations to perform the Work in accordance with the Contract Documents.

**12.4 OWNER May Stop the Work**

If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such

order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

**12.5 Correction or Removal of Defective Work**

If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with non-defective Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

**12.6 One Year Correction Period**

If within one year after the date of Completion or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Change Order.

**12.7 Acceptance of Defective Work**

If, instead of requiring correction or removal and replacement of defective Work, OWNER prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER'S evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals).

**12.8 OWNER May Correct Defective Work**

If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 12.5, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR'S services related thereto, take possession of CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for

which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER'S representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR'S defective Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER'S rights and remedies hereunder.

### **13. PAYMENTS TO CONTRACTOR AND COMPLETION**

#### **13.1 Schedule of Values**

The schedule of values established as provided in paragraph 2.8 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of unit price work will be based on the number of units completed.

#### **13.2 Application for Progress Payment**

At least ten days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER'S interest therein, all of which will be satisfactory to OWNER. OWNER shall, within thirty (30) calendar days of presentation to him of an approved Application for Payment, pay CONTRACTOR the amount approved by ENGINEER. Monthly progress payments shall be ninety (90) percent of the sum obtained by applying the respective bid unit prices to the approved estimated quantities of work completed by the Contractor during the preceding month. The remaining ten (10) percent will be held by the Owner, as retainage. At such time as the Engineer deems appropriate - based on the quality of work performed, progress of cleanup, and other pertinent factors - the rate of retainage, or the total amount retained, may be reduced; although, any reduction in retainage, below the ten (10) percent level, is made solely at the Engineer's discretion. All remaining retainage held will be included in the final payment to the Contractor.

### **13.3 CONTRACTOR'S Warranty of Title**

CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

### **13.4 Review of Applications for Progress Payment**

#### **13.4.1 Submission of Application for Payment**

ENGINEER will, after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

#### **13.4.2 ENGINEER'S Recommendation**

ENGINEER may refuse to recommend the whole or any part of any payment, if, in ENGINEER'S opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER'S opinion to protect OWNER from loss because:

13.4.2.1 the Work is defective, or completed Work has been damaged requiring correction or replacement;

13.4.2.2 the Contract Price has been reduced by Written Amendment or Change Order;

13.4.2.3 OWNER has been required to correct defective Work or complete Work in accordance with paragraph 12.8; or

13.4.2.4 of ENGINEER'S actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1 through 14.2.9 inclusive.

### **13.5 Partial Utilization**

OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and has been completed. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER that said part of the Work is complete and request that a Certificate of Completion be issued for that part of the Work.

### **13.6 Final Inspection**

Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

### **13.7 Final Application for Payment**

After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, marked-up record documents (as provided in paragraph 5.14) and other documents - all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 13.10), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER'S property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a bond or other collateral satisfactory to OWNER to indemnify OWNER against any lien.

### **13.8 Final Payment and Acceptance**

#### **13.8.1 ENGINEER'S Approval**

If, on the basis of ENGINEER'S observation of the Work during construction and final inspection, and ENGINEER'S review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, ENGINEER will, after receipt of the final Application for Payment, indicate in writing ENGINEER'S recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable, subject to the provisions of paragraph 13.10. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application.

#### **13.8.2 Delay in Completion of Work**

If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in paragraph 10 of Part II, Information for Bidders, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be

made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

**13.9 CONTRACTOR'S Continuing Obligation**

CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress, or final payment by ENGINEER, nor the issuance of a certificate of Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 13.10).

**13.10 Waiver of Claims**

The making and acceptance of final payment will constitute:

13.10.1 a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled liens, from defective Work appearing after final inspection or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR'S continuing obligations under the Contract Documents; and

13.10.2 a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

**14. SUSPENSION OF WORK AND TERMINATION**

**14.1 OWNER May Suspend Work**

OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 10 and 11.

**14.2 OWNER May Terminate**

The OWNER may terminate the Work upon the occurrence of any one or more of the following events:

14.2.1 if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

- 14.2.2 if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;
- 14.2.3 if CONTRACTOR makes a general assignment for the benefit of creditors;
- 14.2.4 if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR'S creditors;
- 14.2.5 if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;
- 14.2.6 if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.8 as revised from time to time);
- 14.2.7 if CONTRACTOR disregards laws or regulations of any public body having jurisdiction;
- 14.2.8 if CONTRACTOR disregards the authority of ENGINEER, or
- 14.2.9 if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.



14.2.10 If safety violations are observed and brought to the Contractors attention and Contractor fails to take immediate corrective measures any repeat of similar safety violations, Owner will order an immediate termination of Contract. Note: it is the Contractor's responsibility to know proper safety measures as they pertain to construction and OSHA.

14.2.11 This Contract may be canceled by either party thirty (30) days after delivery by canceling party of written notice of intent to cancel to the other contracting party.

14.2.12 This Contract may be canceled by the Lexington-Fayette Urban County Government if it is determined that the Bidder has failed to perform under the terms of this agreement, such cancellation to be effective upon receipt of written notice of cancellation by the Bidder.

**14.3 CONTRACTOR'S Services Terminated**

Where CONTRACTOR'S services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

**14.4 Payment After Termination**

Upon seven days' written notice to CONTRACTOR, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

**14.5 CONTRACTOR May Stop Work or Terminate**

If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within sixty days after it is submitted, or OWNER fails for sixty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 5.16 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

**15. MISCELLANEOUS**

**15.1 Claims for Injury or Damage**

Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's

employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 15.1 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

## **15.2 Non-Discrimination in Employment**

The CONTRACTOR shall comply with the following requirements prohibiting discrimination:

15.2.1 That no person (as defined in KRS 344.010) shall bid on Lexington-Fayette Urban County Government construction projects, or bid to furnish materials or supplies to the LFUCG, if, within six months prior to the time of opening of bids, said person shall have been found, by declaratory judgment action in Fayette Circuit Court, to be presently engaging in an unlawful practice, as hereinafter defined. Such declaratory judgment action may be brought by an aggrieved individual or upon an allegation that an effort at conciliation pursuant to KRS 344.200 has been attempted and failed, by the Lexington-Fayette County Human Rights Commission.

15.2.2 That it is an unlawful practice for an employer:

15.2.2.1 to fail or refuse to hire, or to discharge any individual or otherwise to discriminate against an individual, with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex, age, or national origin; or

15.2.2.2 to limit, segregate or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee because of such individual's sex, race, color, religion, age, or national origin.

15.2.3 That it is an unlawful practice for an employer, labor organization, or joint-labor management committee controlling apprenticeship or other training or retraining, including on-the-job training programs to discriminate against an individual because of his race, color, religion, sex, age, or national origin in admission to, or employment in, any program established to provide apprenticeship or other training.

15.2.4 That a copy of this Ordinance shall be furnished all suppliers and made a part of all bid specifications.

15.2.5 This Ordinance shall take effect after it is signed, published and recorded, as required by law.

## **15.3 Temporary Street Closing or Blockage**

The CONTRACTOR will notify the ENGINEER at least 72 hours prior to making any temporary street closing or blockage. This will permit orderly notification to all concerned public agencies. Specific details and restrictions on street closure or blockage are contained in the Special Conditions.

**15.4 Percentage of Work Performed by prime CONTRACTOR**

The CONTRACTOR shall perform on site, and with its own organization, Work equivalent to at least fifty (50%) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the ENGINEER determines that the reduction would be to the advantage of the OWNER.

**15.5 Clean-up**

Cleanup shall progress, to the greatest degree practicable, throughout the course of the Work. The Work will not be considered as completed, and final payment will not be made, until the right-of-way and all ground occupied or affected by the Contractor in connection with the Work has been cleared of all rubbish, equipment, excess materials, temporary structures, and weeds. Rubbish and all waste materials of whatever nature shall be disposed of, off of the project site, in an acceptable manner. All property, both public and private, which has been damaged in the prosecution of the Work, shall be restored in an acceptable manner. All areas shall be draining, and all drainage ways shall be left unobstructed, and in such a condition that drift will not collect or scour be induced.

**15.6 General**

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 12.1, 12.3.5, 13.3, and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

**15.7 Debris Disposal**

For all LFUCG projects any trash, construction demolition debris, yard waste, dirt or debris of any kind that is removed from the project site must be disposed of in accordance with local, state, and federal regulations. The disposal site or facility must be approved in advance by the LFUCG and disposal documentation is required. The Contractor will be responsible for payment of any fines associated with improper disposal of material removed from the project site.

END OF SECTION

**PART V**  
**SPECIAL CONDITIONS**  
**INDEX**

1	BLASTING.....	SC-2
2	RISK MANAGEMENT PROVISIONS – INSURANCE AND INDEMNIFICATION.....	SC-2
3	WAGE SCALE (if applicable).....	SC-5
4	Shop Drawings .....	SC-5
5	Contract Documents .....	SC-5
6	Submittals .....	SC-5
7	Record Drawings .....	SC-5
8	Project Sign .....	SC-5
9	Work Schedule and Additional Construction Information .....	SC-5
10	Final Clarifiers Under Slab Piping Inspections and Repair.....	SC-6
11	Final Clarifiers Under Slab Piping Repair/Replacement.....	SC-6
12	Permitting.....	SC-6

1. **BLASTING**

Blasting is not allowed as part of this Contract.

2. **RISK MANAGEMENT PROVISIONS  
INSURANCE AND INDEMNIFICATION**

---

**INDEMNIFICATION AND HOLD HARMLESS PROVISION**

- (1) It is understood and agreed by the parties that Contractor hereby assumes the entire responsibility and liability for any and all damages to persons or property caused by or resulting from or arising out of any act or omission on the part of Contractor or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "CONTRACTOR") under or in connection with this agreement and/or the provision of goods or services and the performance or failure to perform any work required thereby.
- (2) CONTRACTOR shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by CONTRACTOR's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the CONTRACTOR; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.
- (3) In the event LFUCG is alleged to be liable based upon the above, CONTRACTOR shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by LFUCG, which approval shall not be unreasonably withheld.
- (4) These provisions shall in no way be limited by any financial responsibility or insurance requirements, and shall survive the termination of this agreement.
- (5) Not used.
- (6) LFUCG is a political subdivision of the Commonwealth of Kentucky. CONTRACTOR acknowledges and agrees that LFUCG is unable to provide indemnity or otherwise save, hold harmless, or defend the CONTRACTOR in any manner.

**FINANCIAL RESPONSIBILITY**

BIDDER/CONTRACTOR understands and agrees that it shall, prior to final acceptance of its Bid and the commencement of any work, demonstrate the ability to assure compliance with the above Indemnity provisions and these other risk management provisions.

## INSURANCE REQUIREMENTS

YOUR ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AND YOU MAY NEED TO CONFER WITH YOUR INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF SUBMISSION OF A RESPONSE THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED HEREIN. IF YOU FAIL TO COMPLY WITH THE INSURANCE REQUIREMENTS BELOW, YOU MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

### Required Insurance Coverage

BIDDER/CONTRACTOR shall procure and maintain for the duration of this Contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

<u>Coverage</u>	<u>Limits</u>
General Liability aggregate (Insurance Services Office Form CG 00 01)	\$1 million per occurrence, \$2 million or \$2 million combined single limit
Commercial Automobile Liability occurrence (Insurance Services Office Form CA 0001)	combined single, \$1 million per occurrence
Worker's Compensation	Statutory
Employer's Liability	\$500,000.00

The policies above shall contain the following conditions:

- a. All Certificates of Insurance forms used by the insurance carrier shall be properly filed and approved by the Department of Insurance for the Commonwealth of Kentucky (DOI). LFUCG shall be named as an additional insured in the General Liability Policy and Commercial Automobile Liability Policy using the Kentucky DOI approved forms.
- b. The General Liability Policy shall be primary to any insurance or self-insurance retained by LFUCG.
- c. The General Liability Policy shall include a Products and Completed Operations endorsement or Premises and Operations Liability endorsement unless it is deemed not to apply by LFUCG.
- d. The General Liability Policy shall include an Explosion-Collapse Underground (XCU) endorsement.
- e. The General Liability Policy shall include a Pollution liability and/or Environmental Casualty endorsement unless it is deemed not to apply by LFUCG.

- f. LFUCG shall be provided at least 30 days advance written notice via certified mail, return receipt requested, in the event any of the required policies are canceled or non-renewed.
- g. Said coverage shall be written by insurers acceptable to LFUCG and shall be in a form acceptable to LFUCG. Insurance placed with insurers with a rating classification of no less than Excellent (A or A-) and a financial size category of no less than VIII, as defined by the most current Best's Key Rating Guide shall be deemed automatically acceptable.
- h. Owner requests that the Bidder obtain an Umbrella Liability endorsement to the CGL policy for a limit of liability of \$ N/A and that this CGL policy endorsement be renewed for one (1) year after completion of this project.

#### Renewals

After insurance has been approved by LFUCG, evidence of renewal of an expiring policy must be submitted to LFUCG and may be submitted on a manually signed renewal endorsement form. If the policy or carrier has changed, however, new evidence of coverage must be submitted in accordance with these Insurance Requirements.

#### Deductibles and Self-Insured Programs

**IF YOU INTEND TO SUBMIT A SELF-INSURANCE PLAN IT MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE RESPONSE DATE.**

Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by LFUCG's Division of Risk Management, upon review of evidence of BIDDER/CONTRACTOR's financial capacity to respond to claims. Any such programs or retentions must provide LFUCG with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance coverage. If BIDDER/CONTRACTOR satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, BIDDER/CONTRACTOR agrees to provide LFUCG, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

- a. Latest audited financial statement, including auditor's notes.
- b. Any records of any self-insured trust fund plan or policy and related accounting statements.
- c. Actuarial funding reports or retained losses.
- d. Risk Management Manual or a description of the self-insurance and risk management program.
- e. A claim loss run summary for the previous five (5) years.
- f. Self-Insured Associations will be considered.

### Safety and Loss Control

CONTRACTOR shall comply with all applicable federal, state, and local safety standards related to the performance of its works or services under this Agreement and take necessary action to protect the life, health and safety and property of all of its personnel on the job site, the public, and LFUCG.

### Verification of Coverage

BIDDER/CONTRACTOR agrees to furnish LFUCG with all applicable Certificates of Insurance signed by a person authorized by the insurer to bind coverage on its behalf prior to final award, and if requested, shall provide LFUCG copies of all insurance policies, including all endorsements.

### Right to Review, Audit and Inspect

CONTRACTOR understands and agrees that LFUCG may review, audit and inspect any and all of its records and operations to insure compliance with these Insurance Requirements.

### DEFAULT

BIDDER/CONTRACTOR understands and agrees that the failure to comply with any of these insurance, safety, or loss control provisions shall constitute default and that LFUCG may elect at its option any single remedy or penalty or any combination of remedies and penalties, as available, including but not limited to purchasing insurance and charging BIDDER/CONTRACTOR for any such insurance premiums purchased, or suspending or terminating the work.

3. **WAGE SCALES** – Not applicable.
4. **SHOP DRAWINGS**-The Shop Drawings for this Contract are the Division of Engineering Standard Drawings 2017 located at <https://www.lexingtonky.gov/new-development> and in Appendix B.
5. **CONTRACT DOCUMENTS**- As applicable, the Contract Documents concerning the construction on Sanitary Sewer facilities and infrastructure are the Sanitary Sewer and Pumping Station Manual 2009 located at <https://www.lexingtonky.gov/new-development>.
6. **SUBMITTALS** - See Specification Section 01300 for additional requirements on submittals.
7. **RECORD DRAWINGS** - See Specification Section 01785 for additional requirements in Record Drawings.
8. **PROJECT SIGN** – No project sign is required for this project.
9. **WORK SCHEDULE AND ADDITIONAL CONSTRUCTION INFORMATION** – See Specification Section 01015 Owner Furnished Equipment and Services for work schedule restrictions on the Final Clarifier Flow Splitter Boxes gate replacements.



10. **FINAL CLARIFIERS UNDER SLAB PIPING INSPECTIONS** – Included in this project is the CCTV inspection of all existing under slab piping associated with both Final Clarifiers No. 7 & No. 8. Once the clarifier mechanisms have been removed, each of the three (3) pipes under each clarifier slab shall have a CCTV inspection completed from the center feed well extending out to a minimum of five (5) feet beyond the structure (clarifier wall). A visual inspection (by the Owner and Engineer of the under slab piping shall be completed once the existing slab has been removed. The Contractor shall notify the Engineer once this inspection is ready to be completed. The Contractor is responsible for identifying the pipes and sizes for inspection. The Owner and Engineer will assist with this effort. This inspection should include a field report with (at a minimum), length of pipe, pipe material, size of pipe, condition of pipe and pipe joints, any cracking, or structural failures identified within the pipe. Contractor shall review these inspection videos and provide a summary of the findings with the Owner and Engineer.

The Contractor shall provide the Owner and Engineer digital copies of the CCTV videos and reports.

The Contractor is responsible for dewatering the center feed well and the above-mentioned pipes for this CCTV inspection to be completed. All materials, equipment, labor and all other appurtenances associated with the cost of these inspections shall be included in the lump sum cost of the project.

11. **FINAL CLARIFIERS UNDER SLAB PIPING REPAIR/REPLACEMENT** – Once Item 10, CCTV inspections are completed, and reviewed by the Owner and Engineer, the Engineer and Contractor will provide a recommendation to the Owner for any repair or replacement work required. Any damaged or broken pipe(s) under the slab will be replaced prior to installation of the proposed rock anchors and new clarifier concrete slab.

Should any repair work be required, the Contractor, Owner, and Engineer will negotiate a Change Order to the project.

12. **PERMITTING** – Note, this project and the WH WWTP is located in Jessamine County, thus the Contractor shall comply with all required permits.

The Contractor is responsible for any required electrical permits associated with the project.

END OF SECTION

PART VI

CONTRACT AGREEMENT

INDEX

1. SCOPE OF WORK
2. TIME OF COMPLETION AND LIQUIDATED DAMAGES
3. ISSUANCE OF WORK ORDERS
4. THE CONTRACT SUM
5. PROGRESS PAYMENTS
6. ACCEPTANCE AND FINAL PAYMENT
7. THE CONTRACT DOCUMENTS
8. EXTRA WORK
9. CONSENT DECREE REQUIREMENTS
10. ENUMERATION OF SPECIFICATIONS AND DRAWINGS

PART VI

CONTRACT AGREEMENT

THIS AGREEMENT, made on the 15th day of November, 2018, by and between Lexington-Fayette Urban County Government, acting herein called "OWNER" and JUDY CONSTRUCTION CO., doing business as a corporation located in the City of CYNTHIANA, County of HARRISON, and State of KENTUCKY, hereinafter called "CONTRACTOR."

WITNESSETH: That the CONTRACTOR and the OWNER in consideration of one million six hundred and fifteen thousand Dollars and zero cents (\$1,615,000) quoted in the proposal by the CONTRACTOR, dated October 19, 2018, hereby agree to commence and complete the construction described as follows:

**1. SCOPE OF WORK**

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, and the Special Conditions of the Contract, the Specifications and Contract Documents therefore as prepared by Hazen and Sawyer the **WEST HICKMAN WWTP FINAL CLARIFIERS No. 7 AND No. 8 STRUCTURAL REPAIRS** project.

**2. TIME OF COMPLETION AND LIQUIDATED DAMAGES**

The time period estimated and authorized by the OWNER for Substantial Completion of the Work by the Contract Agreement, in full, is hereby fixed as 300 days calendar days. The time shall begin ten (10) days after the CONTRACTOR is given the Notice to Proceed with the Work. This Work includes two (2) Substantial Completion dates:

Substantial Completion 1: Final Clarifiers No. 7 & No. 8 work

Days: 240 calendar days; Date: November 27, 2019

Substantial Completion 2: Flow Splitter Boxes No. 1 & No. 2 work

Days: 330 calendar days; Date: February 25, 2019

Final Completion of Project

Days 365 calendar days; Date: March 31, 2020  
~~April 1, 2020~~

See Specification Sections Part V Special Conditions and 01015 Owner Furnished Equipment and Services for additional information.

**TIME IS OF THE ESSENCE IN THE PERFORMANCE OF THIS AGREEMENT AND CONTRACTOR SHALL BE LIABLE AND RESPONSIBLE FOR DAMAGES SUFFERED BY OWNER AS A RESULT OF THE DELAY CAUSED BY CONTRACTOR.**

Should the contractor fail or refuse to complete the work within the time specified in his Proposal and/or Contract (or extension of time granted by the owner), the Contractor shall pay liquidated damages in an amount of **\$850.00 per day**. The amount of liquidated damages shall in no event be considered as a penalty, nor other than an amount agreed upon by the Contractor and the

Owner for damages, loses, additional engineering, additional resident representation and other cost that will be sustained by the owner, if the Contractor fails to complete the work within the specified time. Liquidated Damages will be applied on a rate per day for each and every calendar day (Sundays and holidays included) beyond the Contract expiration date stipulated in the Contract Documents, considering all time extension granted. **These Liquidated Damages are in addition to any other damages/fees/penalties that are incurred as a result of Consent Decree requirements.**

### **3. ISSUANCE OF WORK ORDERS**

Notice to begin Work will be given in whole or for part of the Work as determined by the OWNER pending the availability of funds. The order of construction will be as determined by the ENGINEER after consultation with the CONTRACTOR and the OWNER.

### **4. THE CONTRACT SUM**

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Contract, as quoted in the proposal, subject to any additions and deductions, as provided therein.

### **5. PROGRESS PAYMENTS**

The OWNER shall make payments on account of the Contract, as provided in accordance with the General Conditions, as estimated by the ENGINEER, less the aggregate of previous payments.

### **6. ACCEPTANCE AND FINAL PAYMENT**

Final payment shall be due within ninety (90) days after completion of the Work, provided the Work be then fully completed and the Contract fully accepted.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the ENGINEER that all payrolls, material bills, and other indebtedness connected with the Work has been paid.

If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, and the ENGINEER so certifies, the OWNER shall upon certificate of the ENGINEER, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

### **7. THE CONTRACT DOCUMENTS**

The Advertisement for Bids, Information for Bidders, the General Conditions, Performance and Payment Bonds, Contract Agreement, Special Conditions, Technical Specifications, any and all Addenda, and Proposal, and Drawings form the Contract, and they are fully a part of the Contract as if hereto attached or herein repeated.

**8. EXTRA WORK**

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the Work, the Contract Sum being adjusted accordingly. All such Work shall be executed and paid for in accordance with the General Conditions, which is a part of this Contract.

**9. CONSENT DECREE REQUIREMENTS**

This project has no Consent Decree requirements.

**10. THE FOLLOWING IS AN ENUMERATION OF THE SPECIFICATIONS AND DRAWINGS (CONTRACT DOCUMENTS):**

**SPECIFICATIONS**

<b>SECTION NO.</b>	<b>TITLE</b>		<b>PAGES</b>
I	Advertisement for Bids	AB	1 thru 5
II	Information for Bidders	IB	1 thru 10
III	Form of Proposal	P	1 thru 35
IV	General Conditions	GC	1 thru 50
V	Special Conditions	SC	1 thru 7
VI	Contract Agreement	CA	1 thru 6
VII	Performance and Payment Bonds	PB	1 thru 7
VIII	Addenda	AD	1 thru 1
IX	Technical Specifications	TS	1 thru 10

(See Table of Contents for complete list of Specifications)

**DRAWINGS**

<b>DRAWING NO.</b>	<b>TITLE</b>
--------------------	--------------

**GENERAL**

G01	Cover Sheet
G02	Legends, Symbols, and Abbreviations
G03	General Notes

**CIVIL**

***Site Work***

C01	Overall Site Plan
-----	-------------------

***Civil Details***

C900	Details
------	---------

**STRUCTURAL**

S01 General Notes

***Final Clarifier No. 7***

S400 Demolition Bottom Plan  
S401 Demolition Top Plan and Section

***Final Clarifier No. 8***

S402 Demolition Bottom Plan  
S403 Demolition Top Plan

***Final Clarifier No. 7***

S404 Rock Anchor Plan  
S405 Bottom Plan  
S406 Top Plan  
S407 Section and Details

***Final Clarifier No. 8***

S408 Rock Anchor Plan  
S409 Bottom Plan  
S410 Top Plan  
S411 Sections

***Structural Standard Details***

S900 Sheet 1  
S901 Sheet 2

**MECHANICAL**

***Final Clarifier Flow Splitter Box No. 1***


M350 Bottom Plan and Top Plan  
M351 Section

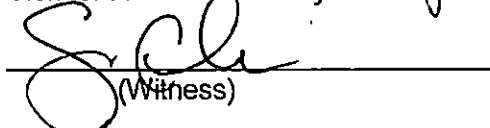
***Final Clarifier Flow Splitter Box No. 2***

M352 Bottom Plan and Top Plan  
M353 Section

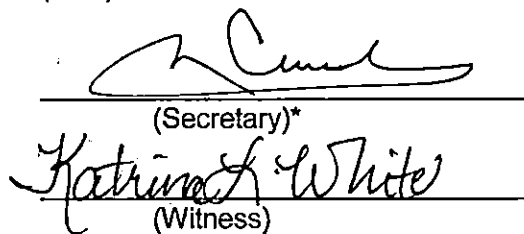
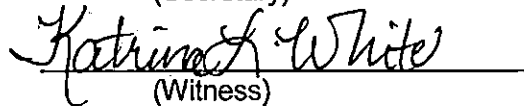
IN WITNESSETH WHEREOF, the parties hereto have executed this Contract as of the date and year above written.

(Seal)

ATTEST:  
  
Clerk of the Urban County Council

  
(Witness)

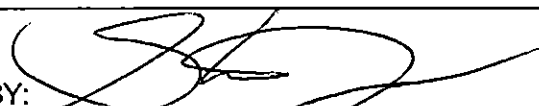
(Seal)

  
(Secretary)\*  
  
(Witness)

Lexington-Fayette Urban County Government.  
Lexington, Kentucky  
(Owner)

BY:   
MAYOR

(Title)

BY:   
Judy Construction

PRESIDENT  
(Title)

103 South Church Street, Cynthiana, KY 41031  
(Address and Zip Code)

IMPORTANT: \*Strike out any non-applicable terms.

Secretary of the Owner should attest. If the CONTRACTOR is corporation, Secretary should attest. Give proper title of each person-executing Contract.

END OF SECTION

**PART VII**

**PERFORMANCE AND PAYMENT BONDS**

1. PERFORMANCE BOND
2. PAYMENT BOND



PART VII

Bond #30042588

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that

Judy Construction Company  
(Name of CONTRACTOR)

103 S. Church Street Cynthiana, KY 41031  
(Address of CONTRACTOR)

a Corporation  
hereinafter  
(Corporation, Partnership, or Individual)

called Principal, and  
Continental Casualty Company  
(Name of Surety)

151 N. Franklin Street Chicago, IL 60606  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT  
200 East Main Street, Third Floor  
Lexington, Kentucky 40507

hereinafter called "OWNER" in the penal sum of:  
One Million Six Hundred Fifteen Thousand and 00/100 Dollars, (\$ 1,615,000.00 ), for the  
payment of whereof Principal and Surety bind themselves, their heirs, executors, administrators,  
successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for **WEST  
HICKMAN WWTP FINAL CLARIFIERS No. 7 & No. 8 STRUCTURAL REPAIRS** in accordance  
with drawings and specifications prepared by: Hazen and Sawyer  
which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall  
promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it  
shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the OWNER.

Whenever, Principal shall be, and declared by OWNER to be in default under the Contract, the  
OWNER having performed OWNER'S obligations thereunder, the Surety may promptly remedy the  
default, or shall promptly:

- (1) Complete the Contract in accordance with its terms and conditions or

- (2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or if the OWNER elects, upon determination by the OWNER and Surety jointly of the lowest responsible bidder, arrange for a Contract between such bidder and OWNER, and make available as Work progresses (even though there may be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph shall mean the total amount payable by OWNER to Principal under the Contract and any amendments thereto, less the amount properly paid by OWNER to Principal.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the OWNER named herein or the heirs, executors, administrators or successors of OWNER.

IN WITNESS WHEREOF, this instrument is executed in Four (4) counterparts, each one of (number)

which shall be deemed an original, this the 15th day of NOVEMBER, 2018.

ATTEST:

[Signature]  
(Principal) Secretary James K. Cowley  
Secretary-Treasurer

Judy Construction Company  
Principal  
BY: [Signature] (s)  
Steve Judy, President  
103 S. Church Street  
(Address)  
Cynthiana, KY 41031

[Signature]  
Witness as to Principal  
103 S. Church Street  
(Address)  
Cynthiana, KY 41031

ATTEST:

SEE ATTACHED POWER OF ATTORNEY  
(Surety) Secretary

Continental Casualty Company  
Surety  
BY: Paula J. Teague  
Attorney-in-Fact  
127 S. Sherrin  
(Address)  
Louisville, KY 40207

(SEAL)  
Monica A. Kaiser  
Witness as to Surety  
127 S. Sherrin Avenue  
(Address)  
Louisville, KY 40207

TITLE: Paula J. Teague, Atty-in-Fact  
Surety

Monica A. Kaiser  
TITLE: Monica A. Kaiser, Witness

BY: Paula J. Teague

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

PART VII

Bond #30042588

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENT: that

Judy Construction Company

(Name of Contractor)

103 S. Church Street Cynthiana, KY 41031

(Address of Contractor)

a Corporation

hereinafter

(Corporation, Partnership or Individual)

called Principal, and

Continental Casualty Company

(Name of Surety)

151 N. Franklin Street Chicago, IL 60606

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto:

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT

200 East Main Street, Third Floor

Lexington, Kentucky 40507

Obligee, hereinafter called OWNER, for the use and benefit of claimants as hereinafter defined, in the amount of One Million Six Hundred Fifteen Thousand and 00/100 (\$1,615,000.00) Dollars (\$) the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for **WEST HICKMAN WWTP FINAL CLARIFIERS No. 7 & No. 8 STRUCTURAL REPAIRS** in accordance with drawings and specifications prepared by: Hazen and Sawyer which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.


1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the OWNER that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The OWNER shall not be liable for the payment of any costs or expenses of any such suit.
3. No suit or action shall be commenced hereunder by any claimant:
  - (a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: The Principal, the OWNER, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the Work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the Work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, OWNER, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.
  - (b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.
  - (c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.
4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against aid improvement, whether or not claim for the amount of such lien be presented under and against this bond.

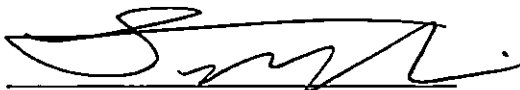
IN WITNESS WHEREOF, this instrument is executed in Four (4) counterparts, each one of (number)

which shall be deemed an original, this the 15th day of NOVEMBER, 2018.

ATTEST:

  
\_\_\_\_\_  
(Principal) Secretary James K. Cowley  
Secretary-Treasurer

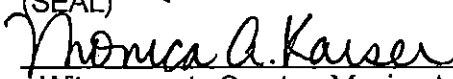
(SEAL)

  
\_\_\_\_\_  
(Witness to Principal)  
103 S. Church Street  
\_\_\_\_\_  
(Address)  
Cynthiana, KY 41031  
\_\_\_\_\_

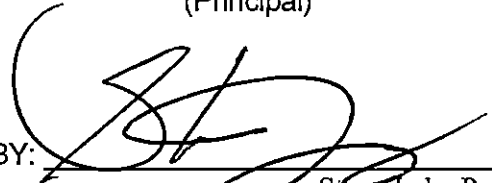
ATTEST:

SEE ATTACHED POWER OF ATTORNEY  
(Surety) Secretary

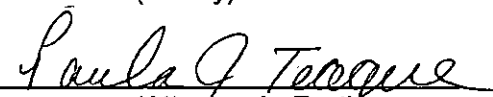
(SEAL)

  
\_\_\_\_\_  
Witness as to Surety Monica A. Kaiser  
127 S. Sherrin Avenue  
\_\_\_\_\_  
(Address)  
Louisville, KY 40207  
\_\_\_\_\_

Judy Construction Company  
\_\_\_\_\_  
(Principal)

BY:  (s)  
\_\_\_\_\_  
103 S. Church Street Steve Judy, President  
\_\_\_\_\_  
(Address)  
Cynthiana, KY 41031  
\_\_\_\_\_

Continental Casualty Company  
\_\_\_\_\_  
(Surety)

BY:   
\_\_\_\_\_  
(Attorney-in-Fact) Paula J. Teague

127 S. Sherrin Avenue  
\_\_\_\_\_  
(Address)  
Louisville, KY 40207  
\_\_\_\_\_

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

END OF SECTION

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company (herein called "the CNA Companies"), are duly organized and existing insurance companies having their principal offices in the City of Chicago, and State of Illinois, and that they do by virtue of the signatures and seals herein affixed hereby make, constitute and appoint

Paula J. Teague, Individually

of Louisville, KY their true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on their behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

Surety Bond No.: 30042588
Principal: Judy Construction Company
Obligee: Lexington Fayette Urban County Government

and to bind them thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of their insurance companies and all the acts of said Attorney, pursuant to the authority hereby given is hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law and Resolutions, printed on the reverse hereof, duly adopted, as indicated, by the Boards of Directors of the insurance companies.

In Witness Whereof, the CNA Companies have caused these presents to be signed by their Vice President and their corporate seals to be hereto affixed on this 27th day of February, 2018.



Continental Casualty Company
National Fire Insurance Company of Hartford
American Casualty Company of Reading, Pennsylvania

Handwritten signature of Paul T. Bruflat

Paul T. Bruflat Vice President

State of South Dakota, County of Minnehaha, ss:

On this 27th day of February, 2018, before me personally came Paul T. Bruflat to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company described in and which executed the above instrument; that he knows the seals of said insurance companies; that the seals affixed to the said instrument are such corporate seals; that they were so affixed pursuant to authority given by the Boards of Directors of said insurance companies and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said insurance companies.



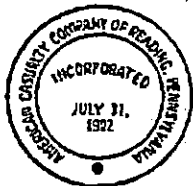
My Commission Expires June 23, 2021

Handwritten signature of J. Mohr

J. Mohr Notary Public

CERTIFICATE

I, D. Johnson, Assistant Secretary of Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company do hereby certify that the Power of Attorney herein above set forth is still in force, and further certify that the By-Law and Resolution of the Board of Directors of the insurance companies printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said insurance companies this 15th day of NOVEMBER, 2018



Continental Casualty Company
National Fire Insurance Company of Hartford
American Casualty Company of Reading, Pennsylvania

Handwritten signature of D. Johnson

D. Johnson Assistant Secretary

Form F6853-4/2012

Go to www.cnasurety.com > Owner / Obligee Services > Validate Bond Coverage, if you want to verify bond authenticity.

## Authorizing By-Laws and Resolutions

### ADOPTED BY THE BOARD OF DIRECTORS OF CONTINENTAL CASUALTY COMPANY:

This Power of Attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the Board of Directors of the Company at a meeting held on May 12, 1995:

"RESOLVED: That any Senior or Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Senior or Group Vice President to the Secretary of the Company prior to such execution becoming effective."

This Power of Attorney is signed by Paul T. Bruflat, Vice President, who has been authorized pursuant to the above resolution to execute power of attorneys on behalf of Continental Casualty Company.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012:

"Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the "Authorized Officers") to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, "Electronic Signatures"); Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company. "

### ADOPTED BY THE BOARD OF DIRECTORS OF NATIONAL FIRE INSURANCE COMPANY OF HARTFORD:

This Power of Attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the Board of Directors of the Company by unanimous written consent dated May 10, 1995:

"RESOLVED: That any Senior or Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Senior or Group Vice President to the Secretary of the Company prior to such execution becoming effective."

This Power of Attorney is signed by Paul T. Bruflat, Vice President, who has been authorized pursuant to the above resolution to execute power of attorneys on behalf of National Fire Insurance Company of Hartford.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012:

"Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the "Authorized Officers") to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, "Electronic Signatures"); Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company. "

### ADOPTED BY THE BOARD OF DIRECTORS OF AMERICAN CASUALTY COMPANY OF READING, PENNSYLVANIA:

This Power of Attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the Board of Directors of the Company by unanimous written consent dated May 10, 1995:

"RESOLVED: That any Senior or Group Vice President may authorize an officer to sign specific documents, agreements and instruments on behalf of the Company provided that the name of such authorized officer and a description of the documents, agreements or instruments that such officer may sign will be provided in writing by the Senior or Group Vice President to the Secretary of the Company prior to such execution becoming effective."

This Power of Attorney is signed by Paul T. Bruflat, Vice President, who has been authorized pursuant to the above resolution to execute power of attorneys on behalf of American Casualty Company of Reading, Pennsylvania.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 25<sup>th</sup> day of April, 2012:

"Whereas, the bylaws of the Company or specific resolution of the Board of Directors has authorized various officers (the "Authorized Officers") to execute various policies, bonds, undertakings and other obligatory instruments of like nature; and

Whereas, from time to time, the signature of the Authorized Officers, in addition to being provided in original, hard copy format, may be provided via facsimile or otherwise in an electronic format (collectively, "Electronic Signatures"); Now therefore be it resolved: that the Electronic Signature of any Authorized Officer shall be valid and binding on the Company. "





# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

10/24/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> GCH Insurance Group 780 Winchester Road Lexington, KY 40505 John Hampton	859-254-1836	<b>CONTACT NAME:</b> John Hampton <b>PHONE (A/C, No, Ext):</b> 859-254-1836 <b>FAX (A/C, No):</b> 859-226-0277 <b>E-MAIL ADDRESS:</b>													
	<table border="1"> <tr> <th>INSURER(S) AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> <tr> <td>INSURER A: The Phoenix Insurance Co</td> <td></td> </tr> <tr> <td>INSURER B: Travelers Property Casualty Co</td> <td>25674</td> </tr> <tr> <td>INSURER C: KY AGC SIF</td> <td></td> </tr> <tr> <td>INSURER D: Charter Oak Fire</td> <td>25615</td> </tr> <tr> <td>INSURER E: Travelers Property Casualty</td> <td>25674</td> </tr> <tr> <td>INSURER F:</td> <td></td> </tr> </table>		INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: The Phoenix Insurance Co		INSURER B: Travelers Property Casualty Co	25674	INSURER C: KY AGC SIF		INSURER D: Charter Oak Fire	25615	INSURER E: Travelers Property Casualty	25674	INSURER F:
INSURER(S) AFFORDING COVERAGE	NAIC #														
INSURER A: The Phoenix Insurance Co															
INSURER B: Travelers Property Casualty Co	25674														
INSURER C: KY AGC SIF															
INSURER D: Charter Oak Fire	25615														
INSURER E: Travelers Property Casualty	25674														
INSURER F:															
<b>INSURED</b> Judy Construction Company 103 South Church St P.O. Box 457 Cynthiana, KY 41031															

### COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> PD DED \$5,000  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:	Y	Y	CO962J2545	04/30/2018	04/30/2019	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 500,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
B	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY	Y	Y	810962J2545	04/30/2018	04/30/2019	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
E	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			Y CUP2J055586	04/30/2018	04/30/2019	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000
C	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N If yes, describe under DESCRIPTION OF OPERATIONS below		N/A	17755	01/01/2018	01/01/2019	<input type="checkbox"/> PER STATUTE <input checked="" type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 4,000,000 E.L. DISEASE - EA EMPLOYEE \$ 4,000,000 E.L. DISEASE - POLICY LIMIT \$ 4,000,000
D	<b>Builders Risk</b> <b>Special/Earthquake</b>			QT-660-6F609125-COF	04/30/2018	04/30/2019	Limit 25,000,000 DED 5,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Project: West Hickman WWTP Final Clarifiers No.7 and No.8 Structural Repairs LFUCG Bid No. 130-2018. Lexington-Fayette Urban County Government is an additional insured in regards to auto and general liability policies the general liability is primary. Policies contain a 30 day cancellation clause with the exception of non-payment per KY statute. (continued)

<b>CERTIFICATE HOLDER</b>  LFUCGCP  Lexington-Fayette Urban County Government Division of Central Purchasing 200 E. Main St. 3rd Fl Rm 338 Lexington, KY 40507	<b>CANCELLATION</b>  SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  AUTHORIZED REPRESENTATIVE 
---	--

**NOTEPAD:**

HOLDER CODE LFUCGCP  
INSURED'S NAME Judy Construction Company

JUDYC-1  
OP ID: KW

PAGE 2  
Date 10/24/2018

Pollution policy in place through Capitol Specialty policy number  
EV20181059-001, \$5,000,000 Aggregate limit/\$2,000,000 Occurrence limit,  
policy period 4/30/18 to 4/30/19.

PART VII

PERFORMANCE AND PAYMENT BONDS

1. PERFORMANCE BOND
2. PAYMENT BOND

**PART VII**

**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS, that

\_\_\_\_\_  
(Name of CONTRACTOR)

\_\_\_\_\_  
(Address of CONTRACTOR)

a \_\_\_\_\_  
hereinafter  
(Corporation, Partnership, or Individual)

called Principal, and

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT  
200 East Main Street, Third Floor  
Lexington, Kentucky 40507

hereinafter called "OWNER" in the penal sum of: \_\_\_\_\_ Dollars, (\$ \_\_\_\_\_), for the payment of whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for **WEST HICKMAN WWTP FINAL CLARIFIERS No. 7 & No. 8 STRUCTURAL REPAIRS** in accordance with drawings and specifications prepared by: Hazen and Sawyer which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the OWNER.

Whenever, Principal shall be, and declared by OWNER to be in default under the Contract, the OWNER having performed OWNER'S obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- (1) Complete the Contract in accordance with its terms and conditions or

- (2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or if the OWNER elects, upon determination by the OWNER and Surety jointly of the lowest responsible bidder, arrange for a Contract between such bidder and OWNER, and make available as Work progresses (even though there may be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph shall mean the total amount payable by OWNER to Principal under the Contract and any amendments thereto, less the amount properly paid by OWNER to Principal.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the OWNER named herein or the heirs, executors, administrators or successors of OWNER.

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each  
one of \_\_\_\_\_  
(number)

which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal) Secretary

\_\_\_\_\_  
Principal

BY: \_\_\_\_\_(s)

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

\_\_\_\_\_  
Witness as to Principal

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

ATTEST:

\_\_\_\_\_  
(Surety) Secretary

\_\_\_\_\_  
Surety

BY: \_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

(SEAL)

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

TITLE: \_\_\_\_\_  
Surety

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

NOTE: The number of executed counterparts of the bond shall coincide with the number of  
executed counterparts of the Contract.

**PART VII**  
**PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENT: that

\_\_\_\_\_  
\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_  
hereinafter  
(Corporation, Partnership or Individual)

called Principal, and

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto:

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT  
200 East Main Street, Third Floor  
Lexington, Kentucky 40507

Obligee, hereinafter called OWNER, for the use and benefit of claimants as hereinafter defined, in the amount of \_\_\_\_\_ Dollars (\$) the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for **WEST HICKMAN WWTP FINAL CLARIFIERS No. 7 & No. 8 STRUCTURAL REPAIRS** in accordance with drawings and specifications prepared by: Hazen and Sawyer which Contract is by reference made a part hereof and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the OWNER that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The OWNER shall not be liable for the payment of any costs or expenses of any such suit.
3. No suit or action shall be commenced hereunder by any claimant:
  - (a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: The Principal, the OWNER, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the Work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the Work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, OWNER, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.
  - (b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.
  - (c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.
4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against aid improvement, whether or not claim for the amount of such lien be presented under and against this bond.



IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each one of \_\_\_\_\_ (number)

which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal) Secretary

(SEAL)

\_\_\_\_\_  
(Witness to Principal)

\_\_\_\_\_  
(Address)

ATTEST:

\_\_\_\_\_  
(Surety) Secretary

(SEAL)

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Principal)

BY: \_\_\_\_\_(s)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Surety)

BY: \_\_\_\_\_  
(Attorney-in-Fact)

\_\_\_\_\_  
(Address)

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

END OF SECTION

THIS PAGE LEFT BLANK INTENTIONALLY

**PART VIII**

**ADDENDA**

**WH WWTP FINAL CLARIFIERS NO. 7 & NO. 8 STRUCTURAL REPAIRS**

All addenda issued during the bidding of the Project will be reproduced in the signed Contract Documents, on the pages following this heading sheet.

<u>Addendum Number</u>	<u>Title</u>	<u>Date</u>
1.	Addendum #1	10/3/2018
2.	Addendum #2	10/5/2018
3.	Addendum #3	10/12/2018
4.		
5.		

MAYOR JIM GRAY



**LEXINGTON**

CHARLES MARTIN  
DIRECTOR  
WATER QUALITY

**ADDENDUM #1**

Bid Number: #130-2018

Date: October 3, 2018

Subject: West Hickman WWTP Final Clarifiers #7 & #8 Structural Repairs

Inquiries to:  
Brian Marcum  
[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)  
(859) 258-3325

**TO ALL PROSPECTIVE SUBMITTERS:**

Please be advised of the following clarification to the above referenced Bid:

The email address in the specification book for questions is incorrect, the correct email address for questions is:

[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)

A handwritten signature in black ink that reads "Todd Slatin" with a circled "R" or similar mark to the right.

Todd Slatin, Director  
Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged.  
This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

SIGNATURE OF BIDDER: \_\_\_\_\_

MAYOR JIM GRAY



**LEXINGTON**

CHARLES MARTIN  
DIRECTOR  
WATER QUALITY

**ADDENDUM No. 2**

Bid Number: **#130-2018**

Date: October 5, 2018

Subject: West Hickman WWTP Clarifiers No. 7 & No. 8  
Structural Repairs

Address inquiries to:  
Brian Marcum  
[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)  
(859) 258-3325

**TO ALL PROSPECTIVE SUBMITTERS:**

Please be advised of the following clarifications to the above referenced Bid:

1. See the Prebid Meeting Minutes and Sign-In Sheet attached to this Addendum.  
Questions from the Prebid Meeting will be responded to in a future Addendum.
  
2. The following Bid dates associated with the project have been revised:
  - Last day for questions – Wednesday, October 10, 2018
    - Questions should be emailed to Brian Marcum at [brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)
  - Final Addendum Issued – Friday, October 12, 2018
  - Bid Opening – Friday, October 19, 2018, at 2:00pm (LFUCG Division of Purchasing)

A revised Specification Section Part III, Form of Proposal will be issued in a future Addendum for use in submitting a bid.

Todd Slatin, Director  
Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged.  
This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

SIGNATURE OF BIDDER: \_\_\_\_\_



**ADDENDUM No. 3**Bid Number: **#130-2018**

Date: October 12, 2018

Subject: West Hickman WWTP Clarifiers No. 7 & No. 8  
Structural RepairsAddress inquiries to:  
Brian Marcum  
[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)  
(859) 258-3325**TO ALL PROSPECTIVE SUBMITTERS:**

Please be advised of the following clarifications to the above referenced Bid:

	<b>Questions</b>	<b>Answers</b>
1.	We are requesting additional contract days to complete the Clarifier 7 & 8 work. See the attached reason the additional time requested. <i>(additional question attachments not included in addendum.)</i>	The contract length will be extended 65 calendar days. See the revised Substantial and Final Completion Days listed in the Specifications Clarifications listed below.
2.	The scope of work in the Walker Process Clarifier quote, does not indicate that we are to remove and ship the clarifier drives back to Walker process for rehabilitation. Please further clarify this work.	The Contractor will be responsible for removing all clarifier equipment from the existing clarifier structure. The Contractor will not be shipping the clarifier drives back to Walker. All work associated with the clarifier (and clarifier drives) will be completed by the Contractor at the WH WWTP site or at a site selected by the Contractor. Walker will provide technical support and documentation on the repairs to the Contractor.
3.	Is sales tax included in the Walker allowance price in specs.	No. The Contractor shall include the sales tax of the Walker clarifier repairs in their base bid.
4.	Are we going to be required to test the existing clarifier concrete tanks for watertightness per spec section 01470. Where will the test water come from. This is normally done for new tanks only.	Leak testing of Final Clarifier Nos. 7 and 8 is required. Owner will provide non-potable source water for leak testing. Contractor shall provide all labor, pumping and hoses required for the leak testing.





5.	Who pays the testing company that tests concrete cylinders and other materials.	As stated in different parts of specifications 02216, 03300-1.05 and 03600, the Contractor pays for materials testing. The Contractor's testing firm shall be a submittal to the project and approved by the Engineer and Owner prior to testing. See additional clarifications below.
6.	Do we have to test the swept in grout for strength before we can start up the Clarifier. If so – this will mean the grout will have to sit for 28 days. This is normally not required. This will also further delay the ability to complete the clarifier work in the time allotted in the new contract currently.	Clarifier start up is not tied to grout strength test results. Assuming no other constraints, grout need only meet the minimum cure time before start up can begin.
7.	Do we paint the concrete walls inside the clarifiers. Paint spec says we do.	No. Concrete walls will not be painted.
8.	Do we paint the existing sluice gate stem guides and operators.	No.
9.	Can you give us a specific paint schedule for this project – as the spec section 09900 is all inclusive.	Specification Section 09900 is intended to cover painting requirements for the clarifier equipment and bridges. Specific clarifier paint requirements are stated in Notes 3 and 4 Drawing S401 and Notes 3 and 4 Drawing S403.
10.	The Walker Process Equipment Proposal (included in Section 11461) states, on Page 2, their offer is subject to their receipt of a purchase order on or before October 20, 2018. Please confirm the Walker Process equipment Proposal will remain valid until such time the successful Bidder has been awarded the project, has executed a Contract with the Owner, and has been allowed sufficient time to provide a Purchase Order to Walker.	Yes, confirmed with J. Dwight Thompson Co. that Walker Process Equipment will hold their price until December 31, 2018.





11.	On Drawing Number S404, Note 3 describes anticipated elevations of the top of rock in various areas of the clarifiers. This information does not appear to be in agreement with Note 7 on Drawing Number S406. Please explain how these two sets of conditions are to be addressed by the Contractor.	Note 3 on Drawing S404 is provided for purposes of estimating rock anchor length and written such that assumed top of rock is at a lower elevation. Note 7 on Drawing S406 is providing for purposes of estimating rock to be removed and written such that assumed top of rock is at a higher elevation. See additional clarification listed below in the Drawing Clarifications.
12.	On Page 4 of the Walker Process Equipment Proposal, the "Estimated Schedule" indicates shop drawing submittal will be 5 to 6 weeks after receipt of a Purchase Order, and equipment shipment will be 10 to 12 weeks after their receipt of approved drawings. Allowing 2 weeks for the Engineer's approval of the shop drawings, the duration of these activities will require 17 to 20 weeks total. This is not possible within the time allowed for completion of the clarifier repairs. Please review these issues and adjust the contract time to provide suitable time.	The contract length will be extended 65 calendar days. See the revised Substantial and Final Completion Days listed in the Specifications Clarifications listed below.
13.	In the Specifications, the Geotechnical Report (prepared by Geotechnology Inc.) includes a Boring Plan which depicts Borings B-4, B-5, B-8, and B-9. These borings were performed by FMSM in 1999. Is the 1999 Geotechnical Report available to bidders (or at least the Boring Logs of these 4 borings)?	Yes, see the attached 1999 FMSM boring logs included in this addendum.







14.	On Drawing Number S404, Detail 3 (Typical Rock Anchor), depicts the use of steel casing pipe, as required. Will PVC casing pipe be deemed an acceptable alternate to steel?	The casing shall be steel.
15.	As depicted in the Rock Anchor Plan drawings for both clarifiers, a few of the anchor locations appear to be too close to existing structure elements to allow proper placement of drilling equipment. Will minor adjustments (inches) in the location of anchor locations be permitted to provide proper working room?	Yes, the Engineer will work with Contractor to adjust rock anchor locations near the demolition cuts. For example, FC7 anchors RA-14, RA-75 and RA-82 can be shifted inward if necessary.

#### 1. DRAWING CLARIFICATIONS

- A. Drawing S403, Demolition Top Plan, dimension in lower left quadrant, change "SEE NOTE 13" to "SEE NOTE 11".
- B. Drawing S01, Note G-16, add the following after last sentence: "EXISTING BACKFILL DOES NOT NEED TO BE REMOVED PRIOR TO LEAK TESTING. FINAL CLARIFIER NOS. 7 AND 8 SHALL BE LEAK TESTED IN ACCORDANCE WITH SPECIFICATION SECTION 01470."
- C. Drawing S404, Note 3, add the following to the beginning of third sentence; "FOR PURPOSES OF ESTIMATING ROCK ANCHOR LENGTH, TOP OF ROCK IS.....".
- D. Drawing S406, Note 7, add the following to the beginning of the note; "FOR PURPOSES OF ESTIMATING ROCK REMOVAL, CONTRACTOR SHALL.....".

#### 2. SPECIFICATION CLARIFICATIONS

- A. Part III, Form of Proposal included in the original Bidding Documents is acceptable and shall be used when submitted a bid.





**2. SPECIFICATION CLARIFICATIONS (cont.)**

- B. Part VI, Contract Agreement, Part 2, the following Substantial and Final Completion calendar days noted in this section shall be revised as noted below.

Substantial Completion 1: Final Clarifiers No. 7 & No. 8 work

Days: 240 calendar days; Date: \_\_\_\_\_, 2019

Substantial Completion 2: Flow Splitter Boxes No. 1 & No. 2 work

Days: 330 calendar days; Date: \_\_\_\_\_, 2019

Final Completion of Project

Days 365 calendar days; Date: \_\_\_\_\_, 2019

- C. Specification Section 01470-1.01-D, delete first sentence and replace with "Final Clarifier Nos. 7 and 8 shall be tested for leakage by the Contractor."
- D. Specification Section 03300-1.05-C, first sentence, change "Article 3.10" to "Article 3.09".
- E. Specification Section 03300-1.05-C, first sentence, change "employed by the Contractor" to "employed and paid for by the Contractor".
- F. Specification Section 03300-1.05-C, second sentence, change "However, the Contractor shall be charged..." to "The Contractor will also be charged...".
- G. Specification Section 03600-1.05-A.1, last sentence, change "Engineer" to "Contractor".
- H. Specification Section 09900, Table 9-1, PAINTING SCHEDULE, delete "Concrete and Masonry" line items in entirety.
- I. Specification Section 09900, Table 9-1, PAINTING SCHEDULE, delete "Other" line items in entirety.
- J. See the attached 1999 FMSM boring logs attached to this Addendum.

Todd Slatin, Director  
Division of Central Purchasing



MAYOR JIM GRAY



**LEXINGTON**

CHARLES MARTIN  
DIRECTOR  
WATER QUALITY

All other terms and conditions of the Bid and specifications are unchanged.  
This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

SIGNATURE OF BIDDER: \_\_\_\_\_





# Hazen *Pre-bid Meeting Minutes*



October 2, 2018

Location: WH WWTP, 645 West Hickman Plant Road, Nicholasville, KY 40356

Time: 2:00pm EST

Attendees: See Sign-In Sheet

Subject: WH WWTP Clarifier No. 7 & No. 8 Stuc Repairs, Bid #130-2018 – Pre-bid Meeting

## 1. Introductions

- Owner: LFUCG DWQ
  - Ben Clements, PE, Project Manager
  - Tiffany Rank, PE, Plant Engineer Manager
  - Jim Worten, WH WWTP Superintendent
- Owner: LFUCG Division of Purchasing
  - Brian Marcum, [brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)
  - Sherita Miller, [smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov)
- Engineer: Hazen and Sawyer
  - Kurt Zehnder, PE, Project Manager

## 2. Project Description

The West Hickman WWTP Clarifiers No. 7 & No. 8 Structural Repair project includes:

- Removal, reinstallation of the existing final clarifier mechanisms and bridges in Final Clarifiers No. 7 & No. 8, and all associated piping, painting and electrical appurtenances included and shown on the Contract Documents.
- Removal and replacement of new sluice gates at existing Final Clarifier Flow Splitter Box No. 1 & No. 2 and all associated appurtenances.
- Removal of 8" concrete slab and swept-in grout layer in existing Final Clarifiers No. 7 & No. 8.
- Cutting off of existing rock anchors in existing Final Clarifiers No. 7 & No. 8.
- Installation of new rock anchors, concrete base slab and swept-in grout in existing Final Clarifiers No. 7 & No. 8.

## 3. Bid/Construction Schedule

- September 25, 2018: Advertisement
- October 2, 2018: Pre-bid Meeting
- October 5, 2018: Last Day for Questions
- October 9, 2018: Final Addendum Issued
- October 16, 2018: Bid Opening, 2:00 pm at Division of Purchasing (downtown Lexington)
- October 22, 2018: Bid Recommendations
- November 1, 2018 & November 15, 2018: Council Meetings

Job no

- November 15, 2018: Bid Awarded / Notice of Award
- November 27, 2018: Notice to Proceed (Tentative)
- November 27, 2018: Preconstruction Meeting (Tentative)
- December 3, 2018: Contract Time Starts / Notice to Proceed (Tentative)
- August 30, 2019: Substantial Completion (10-month contract; see the two substantial completion dates listed in the Agreement).

#### 4. Bidding Questions Procedures

- All bidding questions are to be submitted in writing and addressed to the Division of Purchasing, Brian Marcum [brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov), who in turn will have an addendum issued for the LFUCG.
- Pre-bid meeting Questions:
  - Questions may be asked verbally. Questions will be recorded and issued as part of an addendum.
  - Verbally asked questions may be verbally responded to by the Owner/Engineer at the meeting, and responses recorded in the addendum.
  - Responses from Owner/Engineer at pre-bid meeting may change after we have had a chance to get back to the office and research/clarify information.
- Final written responses in addendums will override any verbal question responses.
- Final issued addendums will be the legal response of record.
- Complete the Risk Assessment (including listing LFUCG as a co-insurer) and turn it in with the submitted bid.
- Addenda will be issued via Lynn Imaging.

#### 5. MWDBE

- The successful Bidder must submit with their bid the following items:
  - Affirmative Action Plan of the firm
  - Current Work Force Analysis Form
  - Good Faith Effort Documentation to meet the MWDBE goals.
  - List of Disadvantaged Business Enterprise Subcontractors and the Dollar Value of each Subcontract
- It is requested that each Bidder include in its bid a goal of (10%) for MWDBE participation and a goal of (3%) for Veteran participation.
- Contact Sherita Miller, [smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov), or Brian Marcum, Division of Central Purchasing for additional information. Contractors can also submit questions through Ionwave.

#### 6. Wage Rates

- State and Federal Wage rates are not required as part of this project.

#### 7. Bid Form

- The bid form contains a lump sum project bid and an Allowance needs to be included in the Contractor's total bid price.

**8. Completed Permits Prior to Construction**

- Any electrical permits required are the responsibility of the Contractor.
- KY DOW notification of the project start of construction.
- In general, Hazen nor LFUCG-DWQ is expecting any permits to be obtained on this project.

**9. Site Access**

The construction, maintenance, removal, and restoration of construction entrances are incidental to the contract and are not a Pay Item.

- The Contractor shall contact Jim Worten prior to mobilizing.
- The Contractor shall keep the plant access roads open at all times.

**10. Site Visit**

- Bidders are encouraged to visit the site immediately following this Pre-bid Meeting. Hazen will be available for any additional questions.

**11. Questions and Comments**

- See the Question and Answer log included in a following Addendum.

**SIGN-IN SHEET**  
**Pre-Bid Meeting 130-2018 West Hickman WWTP Final Clarifiers #7 & 8 Repairs**  
**October 2, 2018 @ 2:00 PM**

Representative	Company Name	DBE/MBE/WBE/ Veteran	Phone#	Email Address
Brian Marcum	LFUCG		859-258-3320	brianm@lexingtonky.gov
Sherita Miller	LFUCG		859-258-3323	smiller@lexingtonky.gov
Kurt Zehnder	HAZEN and SAWYER	NO	859.286.1265	kzehnder@HAZENandSAWYER.com
DANNIE HUTCHINSON	FAB TEC	NO	816-560-2595	DANNIEH@THEJANIKGROUP.COM
Tom Wood	Pace Contracting LLC	NO	502-815-4149	tomwood@pacecontractingllc.com
Jim Worten	LFUCG - West Hickman		859-280-8650	JWORTEN@lexingtonky.gov
TOM CLARK	TEM GROUP INC	MBE	502-454-0101	tclark@temgroupinc.com
DARRYL WELLS	JUDY CONST. CO.	NO	859-221-4301	DWELLS@JUDYCONSTRUCTIONCO.COM
Tiffany Rank	LFUCG - DW		859-425-2406	tiffanyr@lexingtonky.gov
Ken Clements	LFUCG - DW		502-273-9587	kclements@lexingtonky.gov



**PART IX**

**TECHNICAL SPECIFICATIONS**

**INDEX**

**WH WWTP FINAL CLARIFIERS NO. 7 & NO. 8 STRUCTURAL REPAIRS**

SECTION 1	GENERAL SCOPE AND SPECIAL PROVISIONS .....	TS1-1 – TS1-9
SECTION 10	MEASUREMENT AND PAYMENT .....	TS1-10
SECTION 12	ADDITIONAL TECHNICAL SPECIFICATIONS .....	
	(See Table of Contents for complete list of Technical Specifications)	

**TECHNICAL SPECIFICATIONS**  
**SECTION 1**  
**GENERAL SCOPE & SPECIAL PROVISIONS**

1.01 GENERAL SCOPE OF WORK PERFORMED UNDER THIS CONTRACT

A. PURPOSE

The purpose of this section is to define general scope and methods required to structurally repair two final clarifiers at the Lexington-Fayette Urban County Government's West Hickman WWTP.

B. The Contractor shall provide all materials, labor, supervision, and equipment necessary for completion of the Contract. The Contract Documents are intended to provide the basis for proper completion of the work suitable for the intended use of the Owner. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the Project shall be included.

C. Continuous Operations: The existing plant and system must be maintained in continuous operation in such a manner that it meets all local, state, and federal requirements. The contractor is responsible not to deactivate, demolish, or interfere with any system component required for continuous operation until a new or temporary permanent-like system has been installed and is operational. The Contractor is responsible for payment of all fines resulting from any action or inaction on his part or the part of his subcontractors during performance of the Work that causes the facility/facilities to operate in an illegal manner or fail to operate in a legal manner.

1.02 SCOPE OF WORK

The Project includes providing all construction supervision, labor, materials, tools, test equipment necessary for the:

- Removal, repair, rehabilitation, reinstallation of the existing final clarifier mechanisms and bridges in Final Clarifiers No. 7 & No. 8, and all associated piping, painting and electrical appurtenances included and shown on the Contract Documents.
- Removal and replacement of new sluice gates at existing Final Clarifier Flow Splitter Box No. 1 & No. 2 and all associated appurtenances.
- Removal of 8" concrete slab and swept-in grout layer in existing Final Clarifiers No. 7 & No. 8.
- Cutting off of existing rock anchors in existing Final Clarifiers No. 7 & No. 8.
- Installation of new rock anchors, concrete base slab and swept-in grout in existing Final Clarifiers No. 7 & No. 8.
- Allowances are provided in Bid for under slab pipe replacement and existing Walker clarifier rehabilitation and repair work.

...as shown on the Contract Plans and Documents.

1.03 DESIGNATION OF PARTIES

All references in the specifications, contract documents and drawings to "Owner" shall mean the Lexington-Fayette Urban County Government (LFUCG); all references to "Engineer" shall mean the LFUCG Division of Water Quality or authorized representative.

1.04 ACCESS TO AND INSPECTION OF WORK

Representatives of the Kentucky Department of Health, the Kentucky Department for Natural Resources and Environmental Protection and the local public health agencies shall at all times have full access to the project sites for inspection of the work accomplished under this contract and for inspection of all materials intended for use under this contract. The contractor shall provide proper facilities for such access and inspection.

1.05 UTILITIES REQUIRED BY CONTRACTOR

All water, electric current and/or utility service required by the Contractor shall be furnished at his own expense. Non-potable water will be available to the Contractor at no cost.

1.06 TAXES, WORKMEN'S COMPENSATION AND PREVAILING WAGE

Proposals shall be made to include any applicable taxes on payrolls, materials, equipment, vehicles, utilities, etc., including the Kentucky Sales Taxes and shall include compensation for such taxes on all work under this contract.

The Contractor will be required to accept liability for payment of all payroll taxes, sales and use tax, and all other taxes or deductions required by local, state or federal law, such as social security. The Contractor shall carry Workmen's Compensation Insurance to the full amounts as required by Statutes and shall include the cost of all foregoing items in the proposal. The Contractor will not otherwise be reimbursed or compensated for such tax payments. The Contractor is urged to ascertain at his own risk and actual tax liability in connection with the execution or performance of this contract.

\* Federal or state wage rates and regulations, if required for this Contract, will be as described in the Special Conditions Section. State Wage Scale is not required on this contract.

1.07 WORK ON PRIVATE PROPERTY

Private property is defined as property other than that belonging to the Owner. Highway and railroad rights-of-way, public parks, schoolyards and other such properties shall be considered private properties for the purpose of this contract.

In connection with any work performed on "private property", the Contractor shall confine his equipment, the storage of materials and the operations of his workmen to rights-of-way provided for the project by the Owner, and shall take every precaution to avoid damage to the buildings, grounds and facilities of the owners of private property. The Contractor shall be responsible for any damages to public and/or private property resulting from any work under this contract. If, in the Engineer's judgment, prior to or during a repair, it becomes evident that resultant damage will occur, the Engineer shall have the option to change the repair to a Time and Materials basis.

Other responsibilities involving access to work shall be as provided for in the General Conditions Part IV, 12.2.

#### 1.08 RIGHT-OF-WAY REQUIREMENTS

Public Right-of-Way shall be maintained on state and LFUCG highways and streets at all times during inspection and/or construction of pipelines across or alongside said highways and streets. On LFUCG maintained streets and alleys, the Contractor shall abide by Chapter 17C of the Lexington Fayette County Urban County Government concerning Public Rights of Way. The Contractor shall obtain any permits related to or required by, the Work in this Contract. The initial LFUCG ROW permit fee will be paid for by DWQ for this contract, but any extension or fine shall be paid by the Contractor. A copy of the Public Right-of-Way Ordinance can be found at [https://library.municode.com/ky/lexington-fayette\\_county/codes/code\\_of\\_ordinances?nodetd=COOR\\_CH17CPURI-W](https://library.municode.com/ky/lexington-fayette_county/codes/code_of_ordinances?nodetd=COOR_CH17CPURI-W).

A. It shall be the Contractors responsibility to notify the LFUCG Police Department's Safety Officer (859) 258-3600 prior to performing any construction work, which might interfere with traffic or compromise the public welfare or safety.

B. Access to all existing subdivisions and private residences shall also be maintained unless otherwise directed.

#### 1.09 EROSION AND SEDIMENT CONTROL

All excavation activities involved in this contract shall comply with Chapter 11 of the LFUCG's Stormwater Manual. A copy of the Stormwater Manual can be found at [https://drive.google.com/file/d/0B\\_VhcJmdL\\_nhTThoZnJsWlBmZkk/view](https://drive.google.com/file/d/0B_VhcJmdL_nhTThoZnJsWlBmZkk/view)

See Specification Section Sections 02371 & 02372 for additional ESC measures.

#### 1.10 SCHEDULING OF WORK AND REPORTING

See Specification Section Part V – Special Conditions

#### 1.11 RECORD DRAWINGS

The Contractor shall keep accurate records on the construction progress (type of work performed, extent of repairs, location, etc.) on a day-to-day basis. A qualified representative of the Contractor shall enter these into a construction logbook. Entries and notations shall be made in a neat and legible manner, and these logs delivered to the Engineer upon completion of construction. Approval for final payment will be contingent upon compliance with this provision.

See Specification Section 01785 for additional information.

#### 1.12 DRAWINGS AND INFORMATION TO BE FURNISHED BY THE CONTRACTOR

A. The Contractor shall review and check shop drawings and submittals. He shall indicate his review by initials and date, and shall also reference each of the applicable items, section or division of the specifications. If the drawings or submittals deviate from the Standard Drawings or these Technical Specifications, the Contractor shall advise the Engineer, in writing, of the deviation and the reasons therefore.

- B. In the event the Contractor obtains the Engineer's acceptance for the use of material or equipment other than that which is shown on the Standard Drawings or these Technical Specifications, the Contractor shall, at his own expense, and using methods acceptable to the Engineer, make any changes to structures, piping, electrical work, etc., that may be necessary to accommodate this equipment.
- C. Review by the Engineer of shop drawings or submittals of material and equipment shall not relieve the Contractor from the responsibility of furnishing same of proper dimension, size, quality, quantity, materials, and all performance characteristics to efficiently perform the requirements and intent of the Standard Drawings and these Technical Specifications. Review shall not relieve the Contractor from responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the project and compliance with the information in the Standard Drawings and these Technical Specifications including Specification Section 01300.

#### 1.13 COMPLIANCE WITH SAFETY REGULATIONS

- A. The equipment items and work furnished shall comply with all governing federal and state laws regarding safety, including all requirements of the Occupation Health and Safety Act of 1970 (OSHA). **It shall be the contractor's responsibility to provide signs, traffic control devices, and all equipment and devices needed to comply with OSHA rules and regulations throughout the duration of this contract and is to be included in the cost of work to be done, except for flaggers or arrow boards which must be approved by the Engineer and will be a separate pay item. Flaggers shall be trained and equipped to regulate traffic when construction operations or traffic encroach on public traffic lanes. CONTRACTOR's foreman shall be OSHA certified as a competent person.**
- B. Contractor shall abide by OSHA, County and State regulations governing utility construction work, and LFUCG Engineering Construction Manuals.
- C. Traffic control shall be provided according to the Kentucky Department of Highways Manual on Uniform Traffic Control devices for Streets and Highways.

#### 1.14 MAINTENANCE AND OPERATIONS MANUAL

- A. Every piece of equipment furnished and installed shall be furnished with complete maintenance and operations manuals. These shall be detailed in instructions to the Owner's personnel.
- A. All bulletins, brochures, instructions, parts lists, and warranties packaged with and accompanying materials and products delivered and installed on the project shall be saved and transmitted to the Owner through the Engineer.

#### 1.15 PERFORMANCE BONDS AND PAYMENT BONDS

- A. Performance bonds and payment bonds, as specified in Article 10, of Part II INFORMATION FOR BIDDERS, shall continue for a period of one (1) year after acceptance of the work by the Owner and Engineer. These bonds shall be executed on the forms provided as part of the Contract Documents.

- B. If the Contract is extended for additional years, the Performance and Payment bonds must be renewed prior to the extension.

#### 1.16 ROCK REMOVAL

No rock blasting is anticipated for this project. Any necessary rock removal shall be accomplished by mechanical means. Rock removal is incidental and included in the price of the project.

#### 1.18 OBSTRUCTIONS

- A. In cases where storm sewers, sanitary sewers, gas lines, water lines, telephone lines, electric lines, or other underground structures are encountered, they shall not be displaced or disturbed unless necessary, in which case they shall be replaced in as good condition as found as quickly as possible. All such lines or underground structures damaged or disturbed by the construction shall be replaced at the Contractor's expense, unless in the opinion of the Engineer, such damage was caused through no fault of the Contractor.
- B. The Contractor shall notify the utility companies a minimum of 72 hours prior to any excavation adjacent to their facilities, and shall locate all such facilities with their assistance.
- C. Utility markings are the responsibility of the Contractor and he shall follow all requirements associated to BUD / utility markings. Any fines given out because of failure to comply with requirements will be paid for by the Contractor at his own expense.

#### 1.20 WARRANTY AND ACCEPTANCE

- A. The Contractor shall warranty all work to be free of defects in workmanship or materials for a period of one year from the date of completion of all construction. If work meets these specifications, a letter of acceptance, subject to the one-year warranty period, shall be given at the time of completion. A final acceptance letter shall be given upon final inspection at the end of the warranty period, provided the work still complies with these specifications. In the event deficiencies are discovered during the warranty period, they shall be corrected by the Contractor before the final acceptance. The determination of the necessity during the warranty period for the Contractor to repair or replace the work in whole or in part shall rest with the Owner whose decision in the matter shall be final and obligatory upon the Contractor.
- B. All work covered by the Public Right-of-Way Ordinance (see Section 13) shall be warranted by the Contractor for a period of two years from the date of completion of work.

#### 1.21 EMERGENCIES

The Contractor shall provide the Owner and Engineer with an emergency telephone number where he or his coordinator may be reached on a 24 hour, daily basis. The Contractor, upon notification by the Owner of needed emergency repairs, shall start such work within four hours and complete such work within twelve hours of said notification by telephone. If repairs are not started or completed within the above time limits, the Owner, at its option, shall make such repairs and invoice the Contractor the actual cost of labor, equipment, and materials plus actual overhead. The Contractor shall also be liable for costs of pumping sewage, if done by the Owner, as an emergency measure.

## 1.22 SEEDING, SODDING AND TOPSOIL

- A. All sod and seed work required from work in this contract is included in the cost of the work to be done. There is no separate pay item for sod, seeding or any other work associated with sod or seeding listed herein.
- B. The work covered by this section shall include the establishment or restoration of all ground cover including areas to be sodded. This work consists of furnishing all labor, equipment, and materials and all operations in connection with the placement of sod on all finished graded areas not occupied by structures, roads, curbs and gutters, sidewalks, and concrete slab walls, etc., and including grassed areas destroyed or damaged by the Contractor.
- C. Sod shall be bluegrass or fine fescue sod strongly rooted and free of pernicious weeds. It shall be a uniform thickness of not more than 1-1/2 inches and shall have not less than 3/4 inches of soil. All sod shall be grown on a commercial turf farm and no pasture sod shall be acceptable. The source of the sod must be approved by the Engineer before it is cut for delivery.
- D. The sod shall be delivered and installed within 48 hours of being harvested by the producer.
- E. The areas where sod is to be placed shall be thoroughly tilled to a m depth of at least 4 inches by discing, harrowing, or other approved methods until the condition of the soil is acceptable to the Engineer. After harrowing or discing, the sod bed shall be dragged and/or hand raked to 1/2 inch below finish grade.
- F. The incorporation of the fertilizer shall be a part of the tillage operation and shall be applied not less than 24 hours nor more than 48 hours before the sod is to be placed. The entire area to be sodded shall be fertilized with 5-10-5 at the rate of 5 pounds per 1,000 square feet.
- G. Prior to the sod being placed, the area to be sodded shall be lightly watered to moisten the soil surface. The sod shall be carefully unrolled and trimmed to fit irregular areas, with the edges of the sod strips placed tightly together in such a manner as to conceal the joints between the strips. Weed roots shall be removed as the sod is laid. Following placement, the sod shall be lightly watered (approximately a 1/4" application) and rolled with a medium weight lawn roller to minimize any ridging at the seams. The finished surface shall true to grade, even and equally firm at all points. Well-screened topsoil shall be lightly sprinkled over the sodded areas and shall be raked to ensure sealing of the sod joints. Contractor shall be required to thoroughly water sod twice weekly for a period of 30 days and shall be included in the price of the repair. If private property owner's water is to be used Contractor must get permission from owner/s and their name submitted to Engineer to keep in his records. Logs shall be turned in on a weekly basis showing point repairs where lawns were watered to allow tracking to avoid missing yards needing attention. If sod is neglected by contractor and it fails to live the contractor will be required to replace the sod at their cost.
- H. Sod may be placed whenever the sod is not dormant, and the ground is not frozen or muddy. Sod may not be placed at any other time. When the weather does not permit sod to be placed the area should be covered with winter fescue and straw until the conditions change to the point when sod work can be done.

- I. In the event a resident does not want sod but would rather have seed and straw the Contractor must do the following. For seed and straw all graded areas shall be left smooth and thickly sown with a mixture of grasses as are specified by the Engineer, at a rate of not less than one pound of seed per 1,000 square feet. Unless otherwise specified, the mixture shall consist of 60 percent Italian Rye Grass, 20 percent Kentucky Fescue #31 and 20 percent Kentucky Bluegrass by weight. When the final grading has been completed, the entire area to be seeded shall be fertilized with 5-10-5 at the rate of five pounds per 1,000 square feet. After the fertilizer has been distributed, the Contractor shall rake, disc or harrow the ground to thoroughly work the fertilizer into the soil. The seed shall then be broadcast either by hand or by approved sowing equipment at the rate specified. After the seed has been distributed, the Contractor shall then lightly cover the seed by use of a drag or other approved device. All seed shall be certified. The seeded area shall then be covered with straw to a depth of approximately 1-1/2 inches. The Contractor prior to final acceptance shall accomplish any necessary reseeding or repairing.
- J. If the construction work is brought to completion when, in the opinion of the Engineer, the season is not favorable for seeding, then the Contractor shall put down a winter fescue with straw until the conditions change to the point when they can seed it as stated above in this section. Temporary seeding is not a pay item and is incidental to the final sod or seeding.

#### 1.23 COMMUNICATIONS

The Contractor shall also provide, for the duration of the contract, for the Engineer and/or the Owner's representative(s) a means of direct communication acceptable to the Engineer. This may be in the form of a cell phone number or email address. The form of communication and pertinent information related to the mode of communication must be provided to the Engineer and/or the Owner prior to start of construction.

#### 1.24 HIGHWAY RIGHT-OF-WAY MARKERS

The Contractor shall accurately reference all highway right-of-way markers and LFUCG survey monuments that are destroyed or displaced by construction under this Contract, and shall restore and replace all such destroyed or displaced right-of-way markers in kind accurately and complete in place. This replacement shall be coordinated with the Engineer prior to completion.

#### 1.25 FLOW CONTROL

- A. The Contractor shall furnish and install all sewer plugs, bypass piping and pumping equipment where necessary to adequately handle existing flow rates during the inspection, installation, testing, sealing and repair processes. The Contractor will also provide monitoring of bypass or plugging until such time they can be removed and flow restored to normal operation. Any overflow shall be reported to the Engineer and the Kentucky Division of Water.
- B. In general, the pumping equipment shall be positioned in or near the upstream end or lowest area of the vault or clarifier. Sewage shall only be bypassed to an acceptable location agreed upon by WH WWTP plant operators. No overflow will be permitted. See additional pumping notes on the Contract Drawings and herein the Specifications.
- C. Whenever flows in a vault or clarifier are blocked or plugged, sufficient precautions shall be taken by the Contractor to protect the yard piping from damage that might be inflicted by excessive sewer surcharging. Further, precautions shall be taken by the Contractor to ensure



that sewer flow control operations do not cause flooding or damage to other structural included on the plant property. If such damage occurs, it shall be the Contractors responsibility to clean, disinfect, and replace, where appropriate, any and all damaged to the WWTP property as quickly as possible. The Contractor shall be available or make the necessary arrangements to perform work of this nature.

D. See Specification 02140 Dewatering for additional information.

#### 1.26 STANDARD DRAWINGS

Any reference to Standard Drawings herein refers to the "Standard Drawings 2017" and "The Division of Engineering Manuals" issued by the Lexington-Fayette Urban County Government, Department of Environmental Quality, and Division of Engineering. The Contractor is advised to obtain a copy of all these documents prior to the commencement of any contract work. [https://www.lexingtonky.gov/sites/default/files/2017-11/LFUCG%20Standard%20Drawings%202017-Optimized\\_0.pdf](https://www.lexingtonky.gov/sites/default/files/2017-11/LFUCG%20Standard%20Drawings%202017-Optimized_0.pdf)

See Appendix B, LFUCG Standard Drawings 2017.

#### 1.27 DAILY CLEAN UP

At the end of each working day, the Contractor shall conduct a daily clean up of trash, product containers, and misc. debris, at the individual work sites where he has performed or is performing repairs, as directed by the Engineer.

#### 1.28 TEMPORARY TRENCH PROTECTION

In the event that repairs cannot be completed by the end of the normal working day, this being between the hours of 7:30am to 4:00 pm temporary fencing and flash barricades shall be installed around the open trench/vault or clarifier as necessary to ensure that the open pit is highly visible and to impede access. In streets that must be opened to traffic prior to completion of the repair, the trench shall be covered with steel plates capable of bearing traffic loads. At no time shall traffic be allowed to run on DGA or any other stone backfill. If plates are not utilized, temporary blacktop or cold patch may be substituted at no additional cost.

#### 1.29 FINAL CLEAN UP

The work will not be considered as completed and payment will not be made until all final cleanup is complete and the Contractor has affected site restoration in a manner satisfactory to the Engineer. Any excess material shall be removed from site at no additional cost and shall be incidental to the line item work being performed.

#### 1.30 FEDERAL, STATE, AND LOCAL LAWS

It shall be the Contractor's responsibility to research, understand, and comply with all federal, state, and local laws, codes, regulations, ordinances, etc., which relate to performing the work as described within this contract.

1.31 LOCATION OF WORK SITES

- A. In general, the work site contained in this contract are located at one common area.
- B. It shall be the Contractor's responsibility to locate all work sites, including individual manholes. The Contractor shall verify his locations with the Engineer prior to commencement of any work. The Engineer will provide the drawings.

1.32 COORDINATION MEETINGS:

The Contractor's project coordinator shall be required to attend any scheduled progress meetings with the Owner and Engineer. The Engineer will announce the location, date and time of any meeting scheduled. The purpose of these meetings will be to insure proper communication between all parties, convey pertinent information, and to discuss the status of the project.

END OF SECTION

**TECHNICAL SPECIFICATIONS  
SECTION 10  
MEASUREMENT AND PAYMENT**

**10.01 WORK INCLUDED**

The Contractor shall furnish all Supervision, labor, machinery, tools, apparatus, equipment and vehicles, materials, services and other supplies necessary to perform all work shown on the Drawings and/or described in the Specifications and Contract Documents at the Contract lump sum enumerated in Part 2.

All scrap material and its disposal, and disposal of all spoil material is incidental to the Contract.

All dress up, final site grading, seeding, site restoration and sod is incidental to the pay item work being performed and it not a pay item.

**10.02 BID SCHEDULE DESCRIPTION**

This contract is a lump sum bid for all work included and described in the Contract Documents.

**10.03 ESTIMATED QUANTITIES OF WORK**

Wherever the estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of the documents, including the Bid Proposal, they are given for use in comparing bids and the right is specifically reserved, except as otherwise limited by the Contract Documents, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the Work contemplated by this Contract. Such increase or diminution shall be accompanied by an adjustment in the Contract Amount in accordance with the Contract Conditions, and shall not give cause for claims or liability for damages against the Owner or the Engineer, due to such increase or diminution.

END OF SECTION

SECTION 01015

OWNER FURNISHED EQUIPMENT AND SERVICES

PART 1 -- GENERAL

1.01 THE REQUIREMENT

A. Scope

1. The Owner has purchased eight (8) new sluice gates for installation within Final Clarifiers Splitter Boxes No. 1 & No. 2. The eight new gates are located on the West Hickman WWTP property and Contractor will need to transport them from their storage location to the installation sites.
2. The existing eight 42" and 48" sluice gates within Final Clarifiers Splitter Boxes No. 1 & No. 2 as denoted on the Contract Drawings shall be removed and returned to the Owner.
3. The Owner will isolate and dewater each Final Clarifiers Splitter Box approximately to elevation 870.00 ft. Note, existing isolation gates may leak, and the Contractor is required to dewater all remaining sewage from the splitter boxes as needed to properly install the eight new sluice gates and seals. Isolating each splitter box may include but not limited to plugs, bulkhead, etc. All cleaning within each splitter box as needed for installation of the gates shall be included in this project scope.

1.02 SCHEDULE

1. The Owner will isolate each Final Clarifier Splitter Box and keep it out of service for one (1) week for the Contractor to complete the installation of the gates. Each splitter box will be isolated and taken out of service separately and not during back to back weeks.
2. This work is scheduled at the end of the project and shall be completed during low plant flows, between the months of July and September.
3. The work within the Final Clarifier Splitter Boxes is contingent on the West Hickman Wet Weather Storage Tank and Pump Station (WHWWS) project being in operation and plant personnel having the ability to divert the isolated influent flow to the WHWWTP to the WHWWS facility. The gate replacement will not be completed until the WHWWS facility is operational.

PART 2 -- PRODUCTS

2.01 GENERAL

1. All sluice gates to be installed are purchased and located on WHWWTP property.
2. The cost of the eight new gates should not be included in Contractor's lump sum price on installation of the gates within the two splitter boxes and bypass pumping as described herein.

3. The Contractor is responsible for any additional appurtenances, stainless steel nuts or bolts required for proper installation of the gates.

## 2.02 MATERIALS

1. The eight (8) new sluice gates are as follows:
  - a. Four (4), 42" Fresno Valves and Castings, Inc. stainless steel fabricated gates.
  - b. Four (4), 48" Fresno Valves and Castings, Inc. stainless steel fabricated gates.

## 2.03 SHOP DRAWINGS

1. See the Shop Drawing for the sluice gates in Appendix A.

## PART 3 – EXECUTION

### 3.01 FIELD SERVICES

1. The Contractor shall contact Mr. Jim Rhude with Hydro Controls at 513.474.7400 for additional information on the gate installation and prior to installation of the gates. Mr. Rhude has historical knowledge of these gates.

- END OF SECTION -

SECTION 01090  
REFERENCE STANDARDS

PART 1 – GENERAL

1.01 THE REQUIREMENT

- A. Wherever reference is made to any published standards, codes, or standard specifications, it shall mean the latest standard code, specification, or tentative specification of the technical society, organization, or body referred to, which is in effect at the date of invitation for Bids.
- B. All materials, products, and procedures used or incorporated in the work shall be in strict conformance with applicable codes, regulations, specifications, and standards.
- C. A partial listing of codes, regulations, specifications, and standards includes the following:

Air Conditioning and Refrigeration Institute (ARI)

Air Diffusion Council (ADC)

Air Moving and Conditioning Association (AMCA)

The Aluminum Association (AA)

American Architectural Manufacturers Association (AAMA)

American Concrete Institute (ACI)

American Gear Manufacturers Association (AGMA)

American Hot Dip Galvanizers Association (AHDGA)

American Institute of Steel Construction, Inc. (AISC)

American Iron and Steel Institute (AISI)

American National Standards Institute (ANSI)

American Society of Civil Engineers (ASCE)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)

American Society of Mechanical Engineers (ASME)

American Society for Testing and Materials (ASTM)

American Standards Association (ASA)

American Water Works Association (AWWA)

American Welding Society (AWS)

American Wood-Preserver's Association (AWPA)  
Anti-Friction Bearing Manufacturers Association (AFBMA)  
Building Officials and Code Administrators (BOCA)  
Conveyor Equipment Manufacturers Association (CEMA)  
Consumer Product Safety Commission (CPSC)  
Factory Mutual (FM)  
Federal Specifications  
Instrument Society of America (ISA)  
Institute of Electrical and Electronics Engineers (IEEE)  
National and Local Fire Codes  
Lightning Protection Institute (LPI)  
National Electrical Code (NEC)  
National Electrical Manufacturer's Association (NEMA)  
National Electrical Safety Code (NESC)  
National Electrical Testing Association (NETA)  
National Fire Protection Association (NFPA)  
Regulations and Standards of the Occupational Safety and Health Act (OSHA)  
Southern Building Code Congress International, Inc. (SBCCI)  
Sheet Metal & Air Conditioning Contractors National Association (SMACNA)  
Standard Building Code  
Standard Mechanical Code  
Standard Plumbing Code  
Uniform Building Code (UBC)  
Underwriters Laboratories Inc. (UL)

- D. Contractor shall, when required, furnish evidence satisfactory to the Engineer that materials and methods are in accordance with such standards where so specified.
- E. In the event any questions arise as to the application of these standards or codes, copies shall be supplied on-site by the Contractor.

PART 2 -- PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

(NOT USED)

- END OF SECTION -



THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 01210

ALLOWANCES

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. This Section includes administrative and procedural requirements governing allowances. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
  - 1. Defined allowances. Defined allowances include equipment, systems, or services that have been selected by the Owner from a designated supplier. These will be handled in accordance with paragraph 1.06 of this specification.
  - 2. Undefined allowances. Undefined allowances are intended for work which has an unknown scope at the time of bidding. These will be handled in accordance with paragraph 1.07 of this specification.
- C. The following allowances shall be included in the Contractor's bid:
  - 1. Item 2 – Walker Final Clarifier Equipment Repair and Rehabilitation - \$81,505.00

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.03 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, Contractor shall advise Engineer of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Engineer's request, obtain proposals for each allowance for use in making final selections and include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by the Engineer from the designated supplier.

1.04 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

#### 1.05 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

#### 1.06 DEFINED ALLOWANCES

- A. Defined allowances shall include cost to Contractor of specific products and materials ordered by Owner or Engineer under allowance and shall include taxes, freight, and delivery to the project site. Defined allowances are the same as Cash Allowances as defined in Article 11.02 of the General Conditions.
- B. Contractor's costs at the Project site for labor, installation, overhead and profit, and similar costs related to the equipment ordered under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Contractor shall not be allowed any markup of subcontractors work or materials under the allowances. Markup shall be included as part of the Contract sum and not part of the allowance.

#### 1.07 UNDEFINED ALLOWANCES

- A. Undefined allowances shall include work for which the scope is not yet determined. The allowance amount is not guaranteed and is solely for the purpose of determining an initial Contract Price. Undefined allowances are the same as Contingency Allowances as defined in the General Conditions.
- B. Once the scope of work is defined, the Contractor shall present cost and schedule as listed in 1.04.A above.

#### 1.08 UNUSED MATERIALS

- A. Contractor shall be responsible for returning unused materials purchased under an allowance to the manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
- B. When it is not economically practical to return material for credit, Contractor shall be responsible for preparing and delivering unused material to Owner's designated storage location. Otherwise, disposal of unused material shall be Contractor's responsibility.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

END OF SECTION

THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 THE REQUIREMENT

A. Progress Schedule

1. Within ten (10) days after execution of the Agreement, but at least 20 days prior to submitting the first application for a progress payment, the Contractor shall prepare and submit five (5) copies of his proposed construction schedule to the Engineer for review and approval.
2. If so required, the schedule shall be revised until it is approved by the Engineer.
3. Schedule shall be updated monthly, depicting progress to the last day of the month and five (5) copies submitted to the Engineer not later than the 20th day of the month with the application for progress payment.
4. Schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the work and identifying construction activities for each structure and for each portion of Work.
5. Schedule shall be time scaled, identifying the first day of each week. The Schedule shall be provided with estimated dates for Early Start, Early Finish, Late Start and Late Finish. The Work shall be scheduled to complete the Project within the Contract time. The Late Finish date shall equal the Contract Completion Date.
6. Schedule shall show duration (number of days) and float for each activity. Float shall be defined as the measure of leeway in starting or completing a scheduled activity without adversely affecting the Project completion date established by the Contract Documents.
7. Updated schedule shall show all changes since the previous submittal.
8. All revisions to the schedule must have the prior approval of the Engineer.

B. Equipment and Material Orders Schedule

1. Contractor shall prepare and submit an electronic copy of his schedule of principal items of equipment and materials to be purchased to the Engineer for review and approval through Procore Software.
2. If so required, the schedule shall be revised until it is approved by the Engineer.
3. Schedule shall be updated monthly and five (5) copies submitted to the Engineer not later than the fifth day of every month with the application for progress payment.
4. The updated schedule shall be based on the Progress Schedule developed under the requirements of Paragraph 1.01(A) of this Section.

5. Schedule shall be in tabular form with appropriate spaces to insert the following information for principal items of equipment and materials:
  - a. Dates on which Shop Drawings are requested and received from the manufacturer.
  - b. Dates on which certification is received from the manufacturer and transmitted to the Engineer.
  - c. Dates on which Shop Drawings are submitted to the Engineer and returned by the Engineer for revision.
  - d. Dates on which Shop Drawings are revised by manufacturer and resubmitted to the Engineer.
  - e. Date on which Shop Drawings are returned by Engineer annotated either "Furnish as Submitted" or "Furnish as Corrected".
  - f. Date on which accepted Shop Drawings are transmitted to manufacturer.
  - g. Date of manufacturer's scheduled delivery.
  - h. Date on which delivery is actually made.

C. Working Drawings

1. Within thirty (30) days after the Notice to Proceed, Contractor shall prepare and submit five (5) copies of his preliminary schedule of Working Drawing submittals to the Engineer for review and approval. If so required, the schedule shall be revised until it is approved by the Engineer.
2. Working Drawings include, but are not limited to, Shop Drawings, layout drawings in plan and elevation, installation drawings, elementary wiring diagrams, interconnecting wiring diagrams, manufacturer's data, etc. Contractor shall be responsible for securing all of the information, details, dimensions, Drawings, etc., necessary to prepare the Working Drawings required and necessary under this Contract and to fulfill all other requirements of his Contract. Contractor shall secure such information, details, Drawings, etc., from all possible sources including the Drawings, Working Drawings prepared by subcontractors, Engineers, suppliers, etc.
3. Working Drawings shall accurately and clearly present the following:
  - a. All working and installation dimensions.
  - b. Arrangement and sectional views.
  - c. Units of equipment in the proposed positions for installation, details of required attachments and connections, and dimensioned locations between units and in relation to the structures.
  - d. Necessary details and information for making connections between the various trades including, but not limited to, power supplies and interconnecting wiring between units, accessories, appurtenances, etc.

4. In the event that the Engineer is required to provide additional engineering services as a result of a substitution of materials or equipment by the Contractor, the additional services will be provided in accordance with the Contract Documents, and will be covered in supplementary or revised Drawings which will be issued to the Contractor. All changes indicated that are necessary to accommodate the equipment and appurtenances shall be incorporated into the Working Drawings submitted to the Engineer.
5. Working Drawings specifically prepared for this Project shall be on clean white paper or other approved reproducible material sheets of the same size as the Drawings. Working Drawings shall conform to recognized drafting standards and be neat, legible and drawn to a large enough scale to show in detail the required information.
6. The Drawings are used for engineering and general arrangement purposes only and are not to be used for Working Drawings.
7. Shop Drawings
  - a. This project will utilize electronic Shop Drawings and process them through the and online electronic software.
  - b. Contractor shall submit for review by the Engineer Shop Drawings for all fabricated work and for all manufactured items required to be furnished by the Contract Documents.
  - c. Structural and all other layout Drawings prepared specifically for the Project shall have a plan scale of not less than 1/4-inch = 1 foot.
  - d. Where manufacturer's publications in the form of catalogs, brochures, illustrations or other data sheets are submitted in lieu of prepared Shop Drawings, such submittals shall specifically indicate the item for which approval is requested. Identification of items shall be made in ink, and submittals showing only general information are not acceptable.
8. Layout and Installation Drawings
  - a. Contractor shall prepare and submit for review by the Engineer layout and installation drawings for all pipes, valves, fittings, sewers, drains, heating and ventilation ducts, all electrical, heating, ventilating and other conduits, plumbing lines, electrical cable trays, lighting fixture layouts, and circuiting, instrumentation, interconnection wiring diagrams, communications, power supply, alarm circuits, etc., under this Contract. The final dimensions, elevation, location, etc., of pipe, valves, fittings, sewers, ducts, conduits, electrical cable trays, equipment, etc., may depend upon the dimensions of equipment and valves to be furnished by the Contractor.
  - b. Layout and installation drawings are required for both interior and exterior piping, valves, fittings, sewers, drains, heating and ventilation ducts, conduits, plumbing lines, electrical cable trays, etc.
  - c. Layout and installation Drawings shall show connections to structures, equipment, sleeves, valves, fittings, etc.



- d. Drawings shall show the location and type of all supports, hangers, foundations, etc., and the required clearances to operate valves, equipment, etc.
- e. The Drawings for pipes, ducts, conduits, etc., shall show all 3-inch and larger electrical conduits and pressure piping, electrical cable trays, heating and ventilation ducts or pipes, structure, manholes or any other feature within four (4) feet (measured as the clear dimension) from the pipe duct, conduit, etc., for which the profile is drawn.

#### 9. Contractor Responsibilities

- a. All submittals from subcontractors, manufacturers or suppliers shall be sent directly to the Contractor for checking. Contractor shall thoroughly check all Drawings for accuracy and conformance to the intent of the Contract Documents. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors, manufacturers, or suppliers by the Contractor for correction before submitting them to the Engineer.
- b. All submittals shall be bound, dated, properly labeled and consecutively numbered. Information on the label shall indicate Specification section, Drawing number, subcontractor's, manufacturer's or supplier's name and the name or type of item the submittal covers. Each part of a submittal shall be marked and tabulated.
- c. Working Drawings shall be submitted as a single complete package including all associated drawings relating to a complete assembly of the various parts necessary for a complete unit or system.
- d. Shop Drawings shall be submitted as a single complete package for any operating system and shall include all items of equipment and any mechanical units involved or necessary for the functioning of such system. Where applicable, the submittal shall include elementary wiring diagrams showing circuit functioning and necessary interconnection wiring diagrams for construction.
- e. All submittals shall be thoroughly checked by the Contractor for accuracy and conformance to the intent of the contract documents before being submitted to the Engineer and shall bear the Contractor's stamp of approval certifying that they have been so checked. Submittals without the Contractor's stamp of approval will not be reviewed by the Engineer and will be returned to the Contractor. Any comments added to the drawings by the Contractor shall be done in green ink so as to denote any Contractor notes.
- f. If the submittals contain any departures from the Contract Documents, specific mention thereof shall be made in the Contractor's letter of transmittal. Otherwise, the review of such submittals shall not constitute approval of the departure.
- g. No materials or equipment shall be ordered, fabricated or shipped or any work performed until the Engineer returns to the Contractor the submittals, herein required, annotated either "Furnish as Submitted" or "Furnish as Corrected".

- h. Where errors, deviations, and/or omissions are discovered at a later date in any of the submittals, the Engineer's prior review of the submittals does not relieve the Contractor of the responsibility for correcting all errors, deviations, and/or omissions.

10. Procedure for Review

- a. Submittals shall be transmitted in sufficient time to allow the Engineer at least thirty (30) working days for review and processing.
- b. Contractor shall transmit an electronic copy of each submittal through Procure to the Engineer for review. For all Drawings greater than 11-inches by 17-inches in size, the Engineer may request full size hard copies for review.
- c. Submittal shall be accompanied by a letter of transmittal, in duplicate, containing date, project title, Contractor's name, number and titles of submittals, notification of departures and any other pertinent data to facilitate review.
- d. Submittals will be annotated by the Engineer in one of the following ways:
  - "Furnish as Submitted" - no exceptions are taken
  - "Furnish as Corrected" - minor corrections are noted and shall be made.
  - "Revise and Resubmit" - major corrections are noted and a resubmittal is required.
  - "Rejected" - Based on the information submitted, the submission is not in conformance with the Contract Documents. The deviations from the Contract Documents are too numerous to list and a completely revised submission of the proposed equipment or a submission of other equipment is required.
- e. If a submittal is satisfactory to the Engineer, the Engineer will annotate the submittal "Furnish as Submitted" or "Furnish as Corrected" and return a .pdf file copy to the Contractor. If reproducible transparencies are submitted, the Engineer will retain the copies and return the reproducible transparencies to the Contractor.
- f. If a resubmittal is required, the Engineer will annotate the submittal "Revise and Resubmit" and transmit four (4) copies to the Contractor for appropriate action. If reproducible transparencies are submitted, the Engineer will retain the copies and return the reproducible transparencies to the Contractor.
- g. Contractor shall revise and resubmit submittals as required by the Engineer until submittals are acceptable to the Engineer. It is understood by the Contractor that Owner may charge the Contractor the Engineer's charges for review in the event a submittal is not approved (either "Furnish as Submitted" or "Furnish as Corrected") by the third submittal for a system or piece of equipment. These charges shall be for all costs associated with engineering review, meetings with the Contractor or manufacturer, etc., commencing with

the fourth submittal of a system or type of equipment submitted for a particular Specification Section.

- h. Acceptance of a Working Drawing by the Engineer will constitute acceptance of the subject matter for which the Drawing was submitted and not for any other structure, material, equipment or appurtenances indicated or shown.

11. Engineer's Review

- a. Engineer's review of the Contractor's submittals shall in no way relieve the Contractor of any of his responsibilities under the Contract. An acceptance of a submittal shall be interpreted to mean that the Engineer has no specific objections to the submitted material, subject to conformance with the Contract Drawings and Specifications. The Engineer will denote any notes in Red ink so as to record his comments.
- b. Engineer's review will be confined to general arrangement and compliance with the Contract Drawings and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fittings, tolerances, interferences, coordination of trades, etc.

12. Record Working Drawings

- a. Prior to final payment, the Contractor shall furnish the Engineer one complete set of all accepted Working Drawings, including Shop Drawings, for equipment, piping, electrical work, heating system, ventilating system, air conditioning system, instrumentation system, plumbing system, structural, interconnection wiring diagrams, etc.
- b. Manufacturer's publications, submitted in lieu of prepared Shop Drawings, will not be required in reproducible form. However, three (3) sets of such material shall be furnished by the Contractor to the Engineer.
- c. Working Drawings furnished shall be corrected to include any departures from previously accepted Drawings.

D. Preconstruction and Construction Photographs

- 1. The General Contractor shall engage a competent photographer to take photographs at the locations and at such stages of the construction as directed by the Engineer. Preconstruction video and photographs shall be completed prior to any construction activities. Digital format shall be used. Provide all pictures for a given period on a CD, DVD, or digitally uploaded to the online construction software website.
- 2. Provide the equivalent of 36 different exposures per month for the duration of the Contract time. When directed by the Engineer, frequency of photographs may be increased to weekly sessions provided that the equivalent number of exposures is not exceeded. Engineer may waive requirements for photographs during inactive construction periods in favor of increased photographs during active construction sequences.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 01470

WATERTIGHTNESS TESTING OF CONCRETE STRUCTURES

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. It is the intent of these Specifications that all concrete work and sealing work around built-in items and penetrations be performed as required to insure that groundwater, surface water, and water or liquids in tanks, channels and containers will not intrude into any equipment rooms, pipe galleries, habitable areas or other generally dry areas.
- B. The required watertightness shall be achieved by quality concrete construction and proper sealing of all joints and penetrations.
- C. Each unit shall be tested separately and the leakage tests shall be made prior to backfilling and before equipment is installed. Testing water shall be from any potable, non-potable, or natural moving source such as a river or stream, but not from any still water source such as a lake or pond, and not from any wastewater source.
- D. Final Clarifier Nos. 7 and 8 shall be tested for leakage by the Contractor. The Contractor shall provide at his own expense all labor, material, temporary bulkheads, pumps, water measuring devices, etc., necessary to perform the required tests.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01400 -- Quality Control
- B. Section 03300 -- Cast-in-Place Concrete

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. ACI 350.1-10 - Specification for Tightness Testing of Environmental Engineering Concrete Structures

1.04 SUBMITTALS

- A. Testing procedures shall be submitted for approval prior to the test.
- B. Testing Report: Prior to placing the structure in service, submit for review and approval a detailed bound report summarizing the watertightness test data, describing the testing procedure and showing the calculations on which the test data is based.

PART 2 -- PRODUCTS (NOT USED)

## PART 3 – EXECUTION

### 3.01 TEST PREPARATION

- A. The design capability of the structure to withstand testing shall be verified for the pressures to be applied. Another type of test shall not be substituted for hydrostatic tightness testing without approval of the Engineer.
- B. The structure shall not be tested before all elements of the structure which resist any portion of the retained liquid pressure are in place and the concrete has attained its specified compressive strength.
- C. Unless otherwise specified, coatings shall not be applied until after the hydrostatic tightness testing is complete. Liners that are mechanically locked to the surface during the placement of the concrete shall be installed before the hydrostatic tightness testing. Interior liners shall be visually examined for deficiencies (pinholes, tears and partially fused splices) and must pass integrity testing. Deficiencies shall be prepared.
- D. Clean the exposed concrete surfaces of the structure, including the floor, of all foreign material and debris. Prior to testing, standing water in or outside of the structure that would interfere with the inspection of the exposed concrete surfaces of the structure shall be removed.
- E. The concrete surfaces and concrete joints shall be thoroughly inspected for potential leakage points. Areas of potential leakage shall be repaired before filling the containment structure with water.
- F. All openings, fittings, and pipe penetrations in the structure shell shall be inspected at both faces of the concrete, if practical. Defective or cracked concrete shall be repaired prior to testing. All structural penetrations and inlet/outlets shall be securely sealed to prevent the loss of water from the structure during the test. All structural penetrations shall be monitored before and during the test to determine the watertightness of these appurtenances. If the structure is to be filled using the inlet/outlet pipe, positive means shall be provided to check that water is not entering or leaving through this pipe once the structure is filled to the test level. Leakage at these inlet/outlets shall be repaired prior to testing. No allowance shall be made in test measurements for uncorrected known points of leakage
- G. The flow from any underdrain system, if a system is provided, shall be monitored during this same period, and any increase in flow shall be recorded and considered for information as a part of the hydrostatic tightness testing.
- H. The ground water level shall be brought to a level below the top of the base slab and kept at that elevation or at a lower elevation during the test.
- I. No backfill shall be placed against the walls or on the wall footings of the structure to be tested unless otherwise specified.

### 3.02 PROCEDURE

- A. The initial filling of a new structure should not exceed a rate of 4 ft/h. Filling shall be continued until the water surface is at the design maximum liquid level, or either 1 in. below any fixed overflow level in covered containment structure or 4 in. in open structure, whichever is lower.

B. The exterior surfaces of the structure shall be inspected during the period of filling the structure. If any flow of water is observed from the structure exterior surfaces, including joints or cracks, the defect causing the leakage shall be repaired prior to testing.

C. Watertightness Test - Part 1: Qualitative Criteria

1. The water shall be kept at the test level for at least 3 days prior to Part 2 of the testing.
2. The exterior surfaces of the structure shall be observed in both the early mornings and later afternoons during the 3-day period before Part 2 of the test. If any water is observed on the structure exterior surfaces, including joints, repaired honeycombed areas and cracks, where moisture can be picked up on a dry hand, the containment structure shall be considered to have failed Part 1 of the test.
3. Wet areas on top of wall footing shall not be cause to fail Part 1 of the test unless the water can be observed to be flowing.
4. Part 2 of the test may begin prior to completion of repairs for Part 1. However, all defects causing the failure of Part 1 shall be repaired before the structure is accepted.

D. Watertightness Test - Part 2: Quantitative Criteria

1. The test measurements shall not be scheduled for a period when the forecast is for a difference of more than 35°F between the ambient temperature readings at the times of the initial and final level measurements of the water surface. The test shall also not be scheduled when the weather forecast indicates the water surface would be frozen before the test is completed.
2. The vertical distance to the water surface shall be measured to within 1/16 in. from a fixed point on the structure above the water surface. Measurements shall be recorded at 24-hour intervals. Measurements taken at the same time of day will reduce the probability of temperature difference.
3. Measurements shall be taken at two locations, 180° apart, which will minimize the effect of differential settlement. Measurements shall be taken at the same locations to reduce the probability of measurement differences.
4. The test period shall be at least the theoretical time required to lower the water surface 3/8 in. assuming a loss of water at 0.050% of the water volume per 24-hour period. The test period shall not be longer than five days.
5. The water temperature shall be recorded at a depth of 18-in. below the water surface at the start and end of the test.
6. A floating, restrained, partially filled, calibrated, open container for evaporation and precipitation measurement should be positioned in open structures and the water level in the container recorded at 24-hour intervals. Determination of evaporation by a shallow pan-type measuring device is not acceptable due to possible heating of the bottom of the shallow pan resulting in accelerated evaporation.



### 3.03 EVALUATION

- A. The containment structure shall continue to be observed in both the early mornings and late afternoons to verify compliance with Part 1 of the test during Part 2.
- B. At the end of the test period, the water surface shall be recorded to within 1/16-in at the location of original measurements. The water temperature and the evaporation and precipitation measurements shall be recorded.
- C. The allowable loss of water for tightness tests shall not exceed 0.050% of the test water volume in 24 hours.
- D. The change in water volume in the structure shall be calculated and corrected, if necessary, for evaporation, precipitation, and temperature based on the change recorded in the water level from the open container. If the loss exceeds the allowable loss, the structure shall be considered to have failed the test.
- E. During Part 2 of the test, observed flow or seepage of water from the exterior surface, including that from cracks and joints, should be considered as a failed test. The structure shall also be considered to have failed the test if moisture can be transferred from the exterior surface to a dry hand. Dampness or wetness on top of a footing shall not be considered as a failure test.

### 3.04 RETESTING

- A. A restart of the test shall be required when test measurements become unreliable due to unusual precipitation or other external factors.
- B. The Contractor shall be permitted to immediately retest when no visible leakage is exhibited. If the structure fails the second test or if the Contractor does not exercise the option of immediately retesting after the first test failure, the interior of the structure shall be inspected by a diver or by other means to determine probable areas of leakage. The structure shall only be retested after the most probable areas of leakage are repaired.
- C. If the leakage exceeds the allowable limit, the work shall be corrected by methods approved by the Engineer.
- D. Upon completion of the necessary remedial work, the leakage test shall be repeated until it is successfully passed.

### 3.05 NOTIFICATION BY ENGINEER

- A. If any leaks, in excess of the specified amount, are not remedied by the Contractor within four (4) weeks of notification by the Engineer, regardless of whether the cause of these leaks is or is not determined, the Engineer shall have the authority to have these leaks repaired by others. The cost of repairs, by others, shall be deducted from monies due or to become due to the General Contractor.

- END OF SECTION -

SECTION 01510

TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall provide temporary light and power, heating, water service and sanitary facilities for his operations, for the construction operations of the other Contractors of this Project at the site. The temporary services shall be provided for use throughout the construction period.
- B. The Contractor shall coordinate and install all temporary services in accordance with the requirements of the utility companies having jurisdiction and as required by applicable codes and regulations.
- C. At the completion of the work, or when the temporary services are no longer required, the facilities shall be restored to their original conditions.
- D. All costs in connection with the temporary services including, but not limited to, installation, utility company service charges, maintenance, relocation and removal shall be borne by the Contractor at no additional cost to the Owner.
- E. Some temporary facilities that may be required may be indicated on the Drawings; however, the Drawings do not necessarily show any or all of the temporary facilities that the Contractor ultimately uses to complete the work.
- F. Temporary Light and Power
  - 1. The temporary general lighting and small power requirements shall be serviced by 120/240 V, 1 phase, 3 wire temporary systems furnished and installed by the Contractor. This service shall be furnished complete with main disconnect, overcurrent protection, meter outlet, branch circuit breakers, and wiring as required; including branch circuit breakers and wiring as required for furnishing temporary power to the various Contractor's field office service connections, all in accordance with the requirements of the servicing power company and applicable standards and codes. The meter for the temporary 120/240 V service for construction purposes shall be registered in the name of the Contractor and all energy charges for furnishing this temporary electric power shall be borne by the Contractor. Any Contractor with a need for power other than the 120/240 V, 1 phase, 3 wire shall provide such power at his own expense.
  - 2. The Contractor shall make all necessary arrangements, and pay for all permits, inspections, and power company charges for all temporary service installations. All temporary systems shall comply with and meet the approval of the local authorities having jurisdiction. All temporary electrical systems shall consist of wiring, switches, necessary insulated supports, poles, fixtures, sockets, receptacles, lamps, guards, cutouts, and fuses as required to complete such installations. The Contractor shall furnish lamps and fuses for all temporary systems furnished by him and shall replace broken and burned out lamps, blown fuses, damaged wiring and as required to maintain these systems in adequate and safe operating condition. All such

temporary light and power system shall be installed without interfering with the work of the other Contractors.

When it is necessary during the progress of construction that a temporary electrical facility installed under this Division interferes with construction operations, the Contractor shall relocate the temporary electrical facilities to maintain temporary power as required at no additional cost to the Owner. The Contractor shall be responsible at all times for any damage or injury to equipment, materials, or personnel caused by improperly protected or installed temporary installations and equipment.

3. The various Contractors doing the work at the site shall be permitted to connect into the temporary general lighting system small hand tools, such as drills, hammers, and grinders, provided that:
  - a. Equipment and tools are suitable for 120 V, single phase, 60 Hz operation and operating input does not exceed 1,500 volt-amperes.
  - b. Tools are connected to outlets of the system with only one (1) unit connected to a single outlet.
  - c. In case of overloading of circuits, the Contractor will restrict use of equipment and tools as required for correct loading.
4. The Contractor shall keep the temporary general lighting and power systems energized fifteen minutes before the time that the earliest trade starts in the morning and de-energized fifteen minutes after the time the latest trade stops. This applies to all weekdays, Monday through Friday, inclusive, which are established as regular working days.

Any Contractor requiring temporary light and power before or after the hours set forth hereinbefore, or on a Saturday, Sunday, or holiday, shall pay for the additional cost of keeping the system energized and repaired. If more than one Contractor is involved, the charges shall be prorated, such amounts to be determined from the meter readings or other acceptable means previously agreed upon by the Contractors involved. If it is necessary for any Contractor or his employees to be in any structure after regular working hours and the temporary general lighting system is not required for illumination, that Contractor shall provide such illumination required by means of flashlights, electric lanterns, or other devices not requiring use of electricity from the temporary general lighting system.

5. Each Contractor requiring additional power and lighting other than that specified herein (including power for temporary heating equipment to be provided by the Contractor) shall furnish his own service complete with all fuses, cutouts, wiring and other material and equipment necessary for a complete system between the service point and the additional power consumers and shall install his own metering equipment in accordance with the requirements of the servicing power company.
6. The temporary general lighting system shall be installed progressively in structures as the various areas are enclosed or as lighting becomes necessary because of partial enclosure. Lighting intensities shall be not less than 10 foot candles.

7. The Contractor shall provide a separate temporary night lighting circuit for construction security. This system shall be energized at the end of each normal working day and de-energized at the start of each normal working day by the Contractor. The system is to be left energized over Saturdays, Sundays, and all holidays. Lighting intensities shall be not less than 2 foot candles.

8. Electrical welders provided by each trade used in the erection and fabrication of the buildings, structures and equipment shall be provided with an independent grounding cable connected directly to the structure on which the weld is being made rather than adjacent conduit piping, etc.

Electricians and other tradesmen necessary for the required connections and operation of welding equipment and generator, standby generators and similar equipment shall be furnished by the individual Contractors. All costs for such labor and equipment shall be borne by the individual Contractors.

9. Upon completion of the work, but prior to acceptance by the Owner, the Contractor shall remove all temporary services, security lighting systems, temporary general lighting systems and all temporary electrical work from the premises.

#### G. Temporary Heating

1. The Contractor shall provide temporary heating, ventilation coverings and enclosures necessary to properly protect all work and materials against damage by dampness and cold, to dry out the work and to facilitate work in all structures.

2. The equipment, fuel, materials, operating personnel and methods used shall be at all times satisfactory and adequate to maintain critical installation temperatures and ventilation for all work in those areas where the same is required.

3. After any structure is enclosed, the minimum temperature to be maintained is 50°F, unless otherwise specified, where work is actually being performed.

4. Before and during the application of interior finishing, painting, etc., the Contractor shall provide sufficient heat to maintain a temperature of not less than 65°F.

5. Any work damaged by dampness or insufficient or abnormal heating shall be replaced by the Contractor at no additional cost to the Owner.

#### H. Temporary Sanitary Service

1. Sanitary conveniences, in sufficient numbers, for the use of all persons employed on the work and properly screened from public observation, shall be provided and maintained at suitable locations by the Contractor, all as prescribed by State Labor Regulations and local ordinances. The contents of same shall be removed and disposed of in a manner consistent with local and state regulations, as the occasion requires. Each Contractor shall rigorously prohibit the committing of nuisances within, on, or about the work. Sanitary facilities shall be removed from the site when no longer required.

#### I. Temporary Water

1. The Contractor has the option to provide temporary water service for construction purposes, sanitary facilities, fire protection, field offices and for cleaning. The

Contractor shall make all arrangements for connections to the potable water at the plant site.

The Contractor shall pay all charges associated with the connection and all charges for potable water used under this Contract.

2. Each Contractor shall supply potable water for his employees either by portable containers or drinking fountains.
3. An adequate number of hose bibbs, hoses, and watertight barrels shall be provided for the distribution of water.
4. Water service shall be protected from freezing and the service shall be extended and relocated as necessary to meet temporary water requirements.
5. The Contractor will be provided with non-potable water (NPW) on the plant site for construction purposes at no cost to the Contract.

PART 2 -- PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

(NOT USED)

- END OF SECTION -

## SECTION 01520

### MAINTENANCE OF UTILITY OPERATIONS DURING CONSTRUCTION

#### PART 1 -- GENERAL

##### 1.01 THE REQUIREMENT

- A. The existing plant will be maintained in continuous operation by the Owner during the entire construction period of all Contracts as hereinafter specified. The intent of this section is to outline the minimum requirements necessary to allow the Owner to continuously operate and maintain the treatment facility in order to remain in compliance with all permit requirements.
- B. Work under each Contract shall be scheduled and conducted by each Contractor so as not to impede any treatment process, reduce the quality of the plant effluent or cause odor or other nuisance except as explicitly permitted hereinafter. In performing the work shown and specified, the Contractor shall plan and schedule his work to meet the plant and collection system operating requirements, and the constraints and construction requirements as outlined in this Section. No discharge of raw or inadequately treated wastewater shall be allowed. The Contractor shall pay all civil penalties, costs, assessments, etc., associated with any discharge of raw or inadequately treated wastewater associated with the Contractor's work.
- C. The Contractor shall be responsible for coordinating the general construction and electrical, HVAC and plumbing construction schedules and for ensuring that permanent or temporary power is available for all existing, proposed, and temporary facilities that are required to be on line at any given time.
- D. The Contractor has the option of providing additional temporary facilities that can eliminate a constraint, provided it is done without cost to the Owner and provided that all requirements of these Specifications are fulfilled. The Contractor shall submit any such plan for providing additional temporary facilities to eliminate a constraint to the PM for review. Such plans must be approved by the Engineer and Owner prior to the Contractor proceeding. Work not specifically covered in the following paragraphs may, in general, be done at any time during the contract period, subject to the operating requirements and constraints and construction requirements outlined hereinafter. All references to days in this Section shall be consecutive calendar days.

##### 1.02 GENERAL CONSTRAINTS

- A. The Contractor shall schedule the Work so that the plant is maintained in continuous operation. All treatment processes shall be maintained in continuous operation during the construction period except during approved process interruptions. All short-term system or partial systems shutdowns and diversions shall be approved by the Engineer. Long-term process shutdowns and diversions shall conform to the requirements hereinafter specified and shall be minimized by the Contractor as much as possible. If in the judgement of the Engineer a requested shutdown is not required for the Contractor to perform the Work, the Contractor shall utilize approved alternative methods to accomplish the Work. All shutdowns shall be coordinated with and scheduled at times suitable to the Owner. Shutdowns shall not begin until all required materials are on hand and ready for installation. Each shutdown period shall commence at a time approved by the Owner, and the Contractor shall proceed with the Work continuously, start to finish, until the Work is completed and normal plant

operation is restored. If the Contractor completes all required Work before the specified shutdown period has ended, the Owner may immediately place the existing system back into service.

- B. The Contractor shall schedule short-term and long-term shutdowns in advance and shall present all desired shutdowns in the 30 and 60-day schedules at the progress meetings. Shutdowns shall be fully coordinated with the Plant Superintendent at least 48 hours before the scheduled shutdown. Owner personnel shall operate Owner's facilities involved in the short-term and long-term shutdowns and diversions.
- C. Short term shutdowns in plant flow will be allowed for tie-ins to existing facilities, installation of temporary bulkheads, etc. All such shutdowns shall be scheduled for week-end low-flow periods and shall be limited to less than two (2) hours depending on incoming flow rate and storage volume in the collection and treatment system. Any shutdown of two (2) hours or longer duration shall be defined as a long-term shutdown. The Contractor shall provide appropriate diversion facilities to be approved by the Owner, and at no additional cost to the Owner, when the plant cannot be shut down for a sufficient long time to accomplish the required work. The Contractor may be allowed additional time for short-term interruptions if he can demonstrate to the Owner and Engineer that the collection system will not surcharge or overflow during the requested shutdown period. Duration of short-term interruptions allowed will depend on incoming wastewater flow rate and prevention of any discharge of raw wastewater from the collection system. The schedule and duration of short-term shutdowns shall be at the discretion of the Owner.
- D. Any temporary work, facilities, roads, walks, protection of existing structures, piping, blind flanges, valves, equipment, etc. that may be required within the Contractor's work limits to maintain continuous and dependable plant operation shall be furnished by the Contractor at the direction of the Engineer at no extra cost to the Owner.
- E. The Owner shall have the authority to order Work stopped or prohibited that would, in his opinion, unreasonably result in interrupting the necessary functions of the plant operations.
- F. If the contractor impairs performance or operation of the plant as a result of not complying with specified provisions for maintaining plant operations, then the contractor shall immediately make all repairs or replacements and do all work necessary to restore the plant to operation to the satisfaction of the Engineer. Such work shall progress continuously to completion on a 24-hours per day, seven work days per week basis.
- G. The Contractor shall provide the services of emergency repair crews on call 24-hours per day to affect repairs to portions of the plant affected by the Contractor's operations.

#### 1.03 GENERAL OPERATING REQUIREMENTS, CONSTRAINTS, AND CONSTRUCTION REQUIREMENTS

##### A. Access to Plant Site, Roadways, and Parking Areas

- 1. An unobstructed traffic route through the Main Gate of the plant shall be maintained at all times for the Owner's operations personnel and maintenance equipment. Parking for personal vehicles of construction personnel shall be permitted at identified staging area(s) or agreed upon with the Owner within the fence of the treatment plant. Construction personnel may park on City property outside the plant fence in areas approved by the Engineer. The Contractor shall be responsible for providing access to and for preparing and maintaining/approved parking areas.

2. An unobstructed traffic route around the plant site shall be maintained at all times for the Owner's operations personnel and maintenance equipment. Vehicular access to the treatment units and buildings for Owner personnel shall be maintained at all times by the Contractor.
3. The Contractor shall provide temporary measures to protect the existing pavement by filling over with earthen material or supplying other measures acceptable to the Engineer, and he shall repair any damage to existing paved surfaces that occurs during the construction period. Any areas disturbed along the shoulders of the access road and interior roads and elsewhere inside and outside of the plant shall be repaired, graded, seeded, etc. as necessary to match pre-existing conditions.
4. The Contractor shall not undertake the restoration/construction of new roadway (paved, gravel, or asphalt overlay) shown on the Contract Drawings, until all other work on the plant improvements has been completed.
5. It shall be the responsibility of the Contractor to obtain any permits required from LFUCG and Kentucky Division of Water and pay all associated fees.

**B. Personnel Access**

1. Treatment plant personnel shall have access to all areas which remain in operation throughout the construction period. The Contractor shall locate stored material, dispose of construction debris and trash, provide temporary walkways, provide temporary lighting, and other such work as directed by the Engineer to maintain personnel access to areas in operation. Access and adequate parking areas for plant personnel must be maintained throughout construction.

**C. Plumbing Facilities**

1. Unless otherwise allowed by the Engineer, sanitary facilities in the existing structures shall be operational at all times for plant operating personnel. All other building plumbing systems such as roof and floor drains, pumping, etc., shall be maintained for all structures.

**D. Building Heating and Ventilating**

1. Building heating and ventilating for the existing plant structures shall be in service for the entire construction period. Additional temporary heating and ventilation shall be provided as required to maintain facilities under construction adequately heated and vented. The temperatures to be maintained in any areas occupied by plant operating personnel such as offices, lunchrooms, locker rooms, bathrooms, etc., shall be at least 65°F. The temperatures to be maintained in all other interior plant areas, whether new, existing or temporary, shall be maintained at a minimum of 55°F.

**E. Power, Light and Communications Systems (General)**

1. Electric power, lighting service and communications systems shall be maintained in uninterrupted operation in all areas which remain in operation. Individual units may be disconnected as required for replacement, but service shall be available at all times including periods when plant elements are out of service. Shutdown of electrical facilities shall be limited to not more than five (5) hours. The Owner may allow longer outages under conditions determined by the Owner by making use of



the existing and/or the proposed engine-generator at the plant. All costs associated with operation of the engine-generators shall be paid by the Contractor. The Electrical Contractor shall coordinate shutdowns required with the Contractor to minimize the total number of shutdowns required to complete construction. Owner's phone service to the plant shall be maintained in continuous operation during construction.

F. Draining Process Pipes and Conduits (General)

1. The contents of all pipes and conduits to be removed, replaced or relocated (or dewatered for a specific purpose) shall be transferred to a suitable facility in a manner approved by the Owner through hoses or piping, or by using pumps if hydraulic conditions so require them. The Contractor shall provide the pumps, piping and hoses at no additional cost to the Owner. No uncontrolled spillage of a pipe or conduit shall be permitted. Any spillage, other than potable water, shall be immediately washed down and flushed into the appropriate process flow train.

G. Potable Water System

1. Potable water service shall be maintained in continuous service at all times during construction except for short term interruptions required for tie-ins. Shutdown of the potable water system shall be fully planned and coordinated with the Plant Superintendent and shall be limited to not more than two (2) hours. Existing fire hydrants within the plant site shall be operational at all times, unless otherwise approved by the Owner.

H. Non-potable Water System

1. The existing non-potable water service shall be maintained in continuous operation during construction except for short term tie-ins of new or temporary facilities to existing facilities, until the new system is brought into service. Temporary non-potable service for the chlorine and pump seal water systems shall be provided by the Contractor as necessary to insure continuous, uninterrupted service of these critical systems. The Contractor shall furnish any required temporary non-potable water systems at no additional cost to the Owner. The Contractor may require temporary support or relocation or demolition of existing non-potable water facilities to proceed with construction. The Contractor shall provide all temporary supports, relocation of existing piping, or demolition of existing non-potable water piping including placement with temporary or permanent non-potable water piping as required at no additional cost to the Owner. Shutdown of the non-potable water system shall be fully coordinated with the Plant Superintendent and shall be limited to not more than five (5) hours.

I. Sump Pumps and Sumps

1. All existing sumps shall be maintained in an operable condition with either existing pumps or temporary pumps. Interim piping, power and controls shall be provided as required by the staged construction sequence.

J. Seal Water and Service Water Piping

1. A supply of service and seal water and the necessary connections to existing equipment shall be maintained during construction. Interim piping shall be provided as required.

1.04 SPECIFIC OPERATIONAL CONSTRAINTS

- A. The respective Contractors shall schedule the work for the following based on the constraints given in such a manner as to maintain the wastewater treatment plant in continuous operation.

PART 2 -- PRODUCTS

(NOT USED)

PART 3 -- EXECUTION

(NOT USED)

- END OF SECTION -

**THIS PAGE LEFT BLANK INTENTIONALLY**

## SECTION 01540

### DEMOLITION AND REMOVAL OF EXISTING STRUCTURES AND EQUIPMENT

#### PART 1 -- GENERAL

##### 1.01 THE REQUIREMENT

- A. This Section covers the demolition, removal, and disposal of existing buildings, structures, pavement, curbs, and sidewalk, removal and disposal of asbestos materials, and any existing equipment including electrical, plumbing, heating and ventilating equipment and piping not required for the operation of the rehabilitated plant as indicated on the Drawings and as specified hereinafter. The Contractor shall furnish all labor, materials and equipment to demolish buildings and structures and to remove fixtures, anchors, supports, piping and accessories designated to be removed on the Drawings.

##### 1.02 TITLE TO EQUIPMENT AND MATERIALS

- A. Contractor shall have no right or title to any of the equipment, materials or other items to be removed from the existing buildings or structures unless and until said equipment, materials and other items have been removed from the premises. The Contractor shall not sell or assign, or attempt to sell or assign any interest in the said equipment, materials or other items until the said equipment, materials or other items have been removed.
- B. Contractor shall have no claim against the Owner because of the absence of such fixtures and materials.

##### 1.03 CONDITION OF STRUCTURES AND EQUIPMENT

- A. The Owner does not assume responsibility for the actual condition of structures and equipment to be demolished and removed.
- B. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner so far as practicable.
- C. The information regarding the existing structures and equipment shown on the Drawings is based on visual inspection and a walk-through survey only. Neither the Engineer nor the Owner will be responsible for interpretations or conclusions drawn therefrom by the Contractor.

#### PART 2 -- PRODUCTS

(NOT USED)

#### PART 3 -- EXECUTION

##### 3.01 DEMOLITION AND REMOVALS

- A. The removal of all equipment and piping, and all materials from the demolition of buildings and structure shall, when released by the Owner and Engineer, shall be done by the

Contractor and shall become the Contractor's property, unless otherwise noted, for disposition in any manner not contrary to the Contract requirements and shall be removed from the site to the Contractor's own place of disposal.

- B. The Electrical Contractor (Subcontractor) specifically, shall de-energize all panelboards, lighting fixtures, switches, circuit breakers, electrical conduits, motors, limit switches, pressure switches, instrumentation such as flow, level and/or other meters, wiring, and similar power equipments prior to removal. Any electric panels or equipment which are to be retained shall be relocated or isolated by the Electrical Contractor (Subcontractor) specifically, prior to the removal of the equipment specified herein.
- C. The Contractor shall proceed with the removal of the equipment, piping and appurtenances in a sequence designed to maintain the plant in continuous operation as described in Section 01520, Maintenance of Utility Operations During Construction, and shall proceed only after approval of the Engineer.
- D. Any equipment piping and appurtenances removed without proper authorization, which are necessary for the operation of the existing facilities shall be replaced to the satisfaction of the Engineer at no cost to the Owner.
- E. Excavation caused by demolitions shall be backfilled with fill free from rubbish and debris.

### 3.02 PROTECTION

- A. Demolition and removal work shall be performed by competent experienced workmen for the various type of demolition and removal work and shall be carried out through to completion with due regard to the safety of Owner employees, workmen on-site and the public. The work shall be performed with as little nuisance as possible.
- B. The work shall comply with the applicable provisions and recommendation of ANSI A10.2, Safety Code for Building Construction, all governing codes, and as hereinafter specified.
- C. The Contractor shall make such investigations, explorations and probes as are necessary to ascertain any required protective measures before proceeding with demolition and removal. The Contractor shall give particular attention to shoring and bracing requirements so as to prevent any damage to new or existing construction.
- D. The Contractor shall provide, erect, and maintain catch platforms, lights, barriers, weather protection, warning signs and other items as required for proper protection of the public, occupants of the building, workmen engaged in demolition operations, and adjacent construction.
- E. The Contractor shall provide and maintain weather protection at exterior openings so as to fully protect the interior premises against damage from the elements until such openings are closed by new construction.
- F. The Contractor shall provide and maintain temporary protection of the existing structure designated to remain where demolition, removal and new work is being done, connections made, materials handled or equipment moved.
- G. The Contractor shall take necessary precautions to prevent dust from rising by wetting demolished masonry, concrete, plaster and similar debris. Unaltered portions of the existing buildings affected by the operations under this Section shall be protected by dust-proof partitions and other adequate means.

- H. The Contractor shall provide adequate fire protection in accordance with local Fire Department requirements.
- I. The Contractor shall not close or obstruct walkways, passageways, or stairways and shall not store or place materials in passageways, stairs or other means of egress. The Contractor shall conduct operations with minimum traffic interference.
- J. The Contractor shall be responsible for any damage to the existing structure or contents by reason of the insufficiency of protection provided.

### 3.03 WORKMANSHIP

- A. The demolition and removal work shall be performed as described in the Contract Documents. The work required shall be done with care, and shall include all required shoring, bracing, etc. The Contractor shall be responsible for any damage which may be caused by demolition and removal work to any part or parts of existing structures or items designated for reuse or to remain. The Contractor shall perform patching, restoration and new work in accordance with applicable Technical Sections of the Specifications and in accordance with the details shown on the Drawings. Prior to starting of work, the Contractor shall provide a detailed description of methods and equipment to be used for each operation and the sequence thereof for review by the Engineer.
- B. All supports, pedestals and anchors shall be removed with the equipment and piping unless otherwise specified or required. Concrete bases, anchor bolts and other supports shall be removed to approximately 1-inch below the surrounding finished area and the recesses shall be patched to match the adjacent areas. Superstructure wall and roof openings shall be closed, and damaged surfaces shall be patched to match the adjacent areas, as specified under applicable Sections of these Specifications, as shown on the Drawings, or as directed by the Engineer. Wall sleeves and castings shall be plugged or blanked off, all openings in concrete shall be closed in a manner meeting the requirements of the appropriate Sections of these Specifications, as shown on the Drawings, and as directed and approved by the Engineer.
- C. Materials or items designated to remain the property of the Owner shall be as hereinafter tabulated. Such items shall be removed with care and stored at a location at the site to be designated by the Owner.
- D. Where equipment is shown or specified to be removed and relocated, the Contractor shall not proceed with removal of this equipment without specific prior approval of the Engineer. Upon approval, and prior to commencing removal operations, the equipment shall be operated in the presence of representatives of the Contractor, Owner and Engineer. Such items shall be removed with care, under the supervision of the trade responsible for reinstallation and protected and stored until required. Material or items damaged during removal shall be replaced with similar new material or item. Any equipment that is removed without proper authorization and is required for plant operation shall be replaced at no cost to the Owner.
- E. Wherever piping is to be removed for disposition, the piping shall be drained by the Contractor and adjacent pipe and headers that are to remain in service shall be blanked off or plugged and then anchored in an approved manner.

- F. Materials or items demolished and not designated to become the property of the Owner or to be reinstalled shall become the property of the Contractor and shall be removed from the property and legally disposed of.
- G. The Contractor shall execute the work in a careful and orderly manner, with the least possible disturbance to the public and to the occupants of the building.
- H. In general, masonry shall be demolished in small sections, and where necessary to prevent collapse of any construction, the Contractor shall install temporary shores, struts, and bracing.
- I. Where alterations occur, or new and old work join, the Contractor shall cut, remove, patch, repair or refinish the adjacent surfaces to the extent required by the construction conditions, so as to leave the altered work in as good a condition as existed prior to the start of the work. The materials and workmanship employed in the alterations, unless otherwise shown on the Drawing or specified, shall comply with that of the various respective trades which normally perform the particular items or work.
- J. The Contractor shall finish adjacent existing surfaces to new work to match the specified finish for new work. The Contractor shall clean existing surfaces of dirt, grease, loose paint, etc., before refinishing.
- K. The Contractor shall cut out embedded anchorage and attachment items as required to properly provide for patching and repair of the respective finishes.
- L. The Contractor shall confine cutting of existing roof areas designated to remain to the limits required for the proper installation of the new work. The Contractor shall cut and remove insulation, etc., and provide temporary weather tight protection as required until new roofing and flashings are installed.
- M. The Contractor shall remove temporary work, such as enclosures, signs, guards, and the like when such temporary work is no longer required or when directed at the completion of the work.

### 3.04 MAINTENANCE

- A. The Contractor shall maintain the buildings, structures and public properties free from accumulations of waste, debris and rubbish, caused by the demolition and removal operations.
- B. The Contractor shall provide on-site dump containers for collection of waste materials, debris and rubbish, and he shall wet down dry materials to lay down and prevent blowing dust.
- C. At reasonable intervals during the progress of the demolition and removal work or as directed by the Engineer, the Contractor shall clean the site and properties, and dispose of waste materials, debris and rubbish.

### 3.05 EQUIPMENT AND MATERIALS RETAINED BY OWNER

- A. The following equipment and materials will be retained by the Owner:

1. Eight (8) existing sluice gates removed from two final clarifier splitter boxes No. 1 & No. 2.

B. The equipment and materials shall be moved by the Contractor to storage areas, on the site, to be designated by the Owner.

- END OF SECTION -



THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 01650

EQUIPMENT TESTING AND PLANT START-UP

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. See Specification Section 11461 Primary Clarifier Equipment and Section 15206 Sluice Gates for equipment testing and start-up requirements.

- END OF SECTION

THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 01785  
PROJECT RECORD DOCUMENTS

PART 1 -- GENERAL

1.01 MAINTENANCE OF DOCUMENTS

- A. Maintain at job site, one copy of:
  - 1. Contract Drawings
  - 2. Specifications
  - 3. Addenda
  - 4. Reviewed Shop Drawings
  - 5. Change Orders
  - 6. Other Modifications to Contract
- B. Store documents in approved location, apart from documents used for construction.
- C. Provide files and racks for storage of documents.
- D. Maintain documents in clean, dry, legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by Engineer and Owner.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Submittals: Section 01300.

1.03 MARKING DEVICES

- A. Provide colored pencil or felt-tip marking pen for all marking.

1.04 RECORDING

- A. Label each document "PROJECT RECORD" in 2-inch high printed letters.
- B. Keep record documents current.
- C. Do not permanently conceal any work until required information has been recorded.
- D. Contract Drawings: Legibly mark to record actual construction:

1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
  2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
  3. Field changes of dimension and detail.
  4. Changes made by Change Order or Field Order.
  5. Details not on original Contract Drawings.
- E. Specifications and Addenda: Legibly mark up each section to record:
1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
  2. Changes made by Change Order or Field Order.
  3. Other matters not originally specified.
- F. Shop Drawings: Maintain as record documents; legibly annotate shop drawings to record changes made after review.

#### 1.05 SUBMITTALS

- A. At completion of project, deliver two hard copies and one CD with pdf of all record documents to Engineer.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
1. Date.
  2. Project Title and Number.
  3. Contractor's Name and Address.
  4. Title and Number of each Record Document.
  5. Certification that each Document as Submitted is Complete and Accurate.
  6. Signature of Contractor, or His Authorized Representative.

#### PART 2 – PRODUCTS (NOT USED)

#### PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 02050

DEMOLITION

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall furnish all labor, materials and equipment in accordance with the requirements of Section 01520 - Maintenance of Utility Operations During Construction and Section 01540 - Demolition and Removal of Existing Structures and Equipment.
- B. In addition, the Contractor shall demolish and remove all concrete and asphaltic paving, curbs, sidewalk, and miscellaneous yard structures as required and shown on the Contract Drawings during the construction work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01520 - Maintenance of Utility Operations During Construction
- B. Section 01540 - Demolition and Removal of Existing Structures and Equipment

PART 2 -- EXECUTION

2.01 DEMOLITION

- A. Existing concrete and asphaltic paving, curbs, sidewalk and miscellaneous yard structures within the areas designated for new construction work shall be completely demolished and all debris removed from the site.
- B. Excavation caused by demolition shall be backfilled with fill free from rubbish and debris.
- C. Work shall be performed in such manner as not to endanger the safety of the workmen or the public or cause damage to nearby structures.
- D. Provide all barriers and precautionary measures in accordance with Owner's requirements and other authorities having jurisdiction.
- E. Where parts of existing structures are to remain in service, demolish the portions to be removed, repair damage, and leave the structure in proper condition for the intended use. Remove concrete and masonry to the lines designated by drilling, chipping, or other suitable methods. Leave the resulting surfaces reasonably true and even, with sharp straight corners that will result in neat joints with new construction and be satisfactory for the purpose intended. Where existing reinforcing rods are to extend into new construction, remove the concrete so that the reinforcing is clean and undamaged. Cut off other reinforcing 1/2-inch below the surface and fill with epoxy resin binder flush with the surface.
- F. Prior to the execution of the work, the Contractor, Owner and Engineer shall jointly survey the condition of the adjoining and/or nearby structures. Photographs and records shall be made of any prior settlement or cracking of structures, pavements, and the like, that may become the subject of possible damage claims.

2.02 DISPOSAL OF MATERIAL

- A. All debris resulting from the demolition and removal work shall be disposed of by the Contractor as part of the work of this Contract. Material designated by the Engineer to be salvaged shall be stored on the construction site as directed. All other material shall be disposed of off site by the Contractor at his expense.
- B. Burning of any debris resulting from the demolition will not be permitted at the site.

- END OF SECTION -

SECTION 02140

DEWATERING

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, materials, and equipment, perform all work necessary to lower and control the groundwater levels and hydrostatic pressures to permit all excavations and construction to be performed in dry conditions. The work shall include the following:
1. Testing, operation, maintenance, supervision, rewatering, and final dismantling and removal from the site of the dewatering system.
  2. The cost of any replacement or rehabilitation of the subgrade or structures damaged due to dewatering system failures or Contractor negligence.
  3. Compliance with all regulations relating to this work.
  4. The diversion, collection, and removal of all ice, snow and surface runoff from the work areas, and removal of groundwater from new excavations to permit construction in the dry.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Requirements of related work are included in Division 1 and Division 2 of these Specifications.

1.03 REFERENCE SPECIFICATIONS CODES AND STANDARDS

- A. Without limiting the generality of other requirements of these Specifications, all work herein shall conform to or exceed the applicable requirements of the following documents to the extent that the provisions therein are not in conflict with the requirements of this Section.
1. ASTM D1556 Density of soil in place by the Sand Cone Method.
  2. ASTM D2167 Density of soil in place by the Rubber Balloon Method.
  3. Bureau of Reclamation Groundwater Manual Sediment Test by Imhoff Cone

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals:
1. Name of dewatering subcontractor, if applicable
  2. Shop Drawings indicating the following:
    - a. Plans showing the methods and location of dewatering and discharge including a sufficient number of detailed sections to clearly illustrate the scope of work.



- b. Relationship of the dewatering system, observation wells, and discharge line to existing buildings, other structures, utilities, streets and new construction.
  - c. Utility locations.
  - d. Drawings shall bear the seal and signature of the qualified Registered Professional Engineer in charge of preparing the drawings.
  - e. List of materials and equipment to be used.
  - f. A sample of all well record forms to be maintained during construction.
3. Detailed description of the sequence of dewatering operations
  4. Dewatering well installation records indicating an identification number, location, dimensions, and installation procedures and materials.
  5. Observation well installation records indicating an identification number, location, dimensions, and installation procedures and materials.
  6. Emergency observation plan to be put into operation during failure of the dewatering system
  7. Monthly Dewatering System Monitoring Reports containing the following data on approved forms:
    - a. For observation wells, daily piezometric levels shall be identified by date, time, well number and system (subsystem if multiple pumps are used) pumping rate. Piezometric levels shall be noted in feet of drawdown and groundwater elevation.
    - b. For dewatering wells, suspended material test results shall be identified by date, time, well number, well pumping rate (if monitored) and system (subsystem if multiple pumps are used) pumping rate.
    - c. Installation records for new wells.
  8. Schedule and records of all maintenance tests for primary and standby dewatering systems including the following:
    - a. Maintenance tests and water quality tests for suspended matter at the discharge point including date, time of day, elapsed times of tests procedures, components tested, suspended particles, resultant observations and well readings.
    - b. Daily discharge rates.
    - c. Installation and removal of wells.
    - d. General observations of the system such as equipment running times, and failures.

9. Dewatering well removal records
10. Observation well removal records

#### 1.05 QUALITY ASSURANCE

- A. The Contractor shall be solely responsible for the arrangement, location, and depths of the dewatering system necessary to accomplish the work described herein.
- B. Dewatering shall prevent the loss of fines, seepage, boils, quick conditions or softening of the foundation strata while maintaining stability of the sides and bottom of the excavation and providing dry conditions for construction operations.

### PART 2 -- PRODUCTS

#### 2.01 MATERIALS

- A. Materials, especially the well screen, shall be carefully chosen to be compatible with the environment to prevent erosion, deterioration, and clogging.
- B. Surging of the natural formation to form a "gravel pack" is strictly prohibited.

### PART 3 -- EXECUTION

#### 3.01 EXAMINATION OF THE SITE

- A. Become familiar with the surface and subsurface site conditions.
- B. Obtain the data required to analyze the water and soil environment at the site in order to assure that the materials used for the dewatering systems will not erode, deteriorate, clog or otherwise hinder the system's performance during the period of the dewatering.
- C. Prior to the execution of the work, the Contractor, Owner and Engineer shall jointly survey the condition of adjoining structures. Photographs and records shall be made of any prior settlement or cracking of structures, pavements, and the like, that may become the subject of possible damage claims.

#### 3.02 DESIGN

- A. The dewatering system shall be capable of relieving all hydrostatic pressure against the height of the excavation walls and of lowering the hydrostatic level below the bottom of the base slab a minimum of four (4) feet in the work areas both prior to excavation, and during excavation and construction.
- B. The dewatering system shall be segmented so that if the operation of any one segment is disrupted, the remaining segment plus activated redundant components are capable of maintaining the groundwater at the stated levels.
- C. Provide, operate and maintain all ditches, berms, site grading, sumps and pumping facilities to divert, collect and remove all surface water from work areas. All collected water shall be discharged into the outfall pipe.

- D. Provide pipe and pumps of sufficient size and quantity to be able to flood the excavation within 12 hours in an emergency situation. Restoration of the working area shall be carried out by the Contractor at no additional cost to the Owner.
- E. Carry the dewatering system discharge through pipes out of the area of the excavation into the outfall junction manhole shown on the Drawings. Provide meters to measure the discharge flow.
- F. Place a portion of the header and discharge system underground to provide vehicle crossings or access to existing structure as required.
- G. Provide a standby dewatering system that meets the following requirements:
  - 1. Provide 100 percent standby power.
  - 2. Provide a 15 percent minimum increase in the number of wells and related equipment required to operate the dewatering system installed and ready to operate.
  - 3. Provide a minimum of three separate power units for the standby power system and one installed auxiliary unit for each individually powered pump.
  - 4. Provide separate discharge lines from each well or common lines with valves such that any well or wells that malfunction or are damaged can be isolated from the others.
  - 5. The systems shall be laid out and designed in such a way that portions of the system may be isolated for routine maintenance or repair in case of accidental damage without affecting the normal operation of the system.
- H. Provide sufficient fuel to maintain a five-day supply on site for fuel power systems.
- I. Provide observation wells to determine compliance with dewatering requirements as indicated on the Drawings, Shop Drawings, and the Engineer.
- J. Designate certain observation wells as emergency observation wells.

### 3.03 INSPECTION

- A. All tests and inspections require the witnessing and written approval of the Owner and Engineer.
- B. Provide safe access for the owner and Engineer to perform testing and inspection.
- C. The Owner and Engineer will provide oral and written notice to the Contractor for all tests and inspections that do not meet approval.

### 3.04 INSTALLATION AND TESTING

- A. Install the dewatering system from the existing ground surface or from the bottom of an excavation which is located above the natural groundwater level.
- B. Pump each well individually at its maximum or design flow and take a water sample using the following procedures:

1. Obtain samples from stopcocks located along the discharge lines at points of high turbulence or between 4 and 8 o'clock on the perimeter of straight sections of pipe.
  2. Flush the stopcock for a few seconds before taking a sample.
  3. Take a 1-liter sample with the stopcock fully open.
- C. Test the sample following the Sediment Test by Imhoff Cone for two to three minutes and measure the volume of settled materials to the nearest 0.01 milliliters (0.01 milliliters = 10 ppm).
- D. All wells shall be evaluated as follows:
1. Wells producing 10 ppm or less shall be accepted.
  2. Wells producing between 10 and 20 ppm may be accepted by the Engineer based on the evaluation of average ppm for all wells, ppm of adjacent wells, and total quantity of water which is actually pumped to dewater the excavation.
  3. Well producing more than 20 ppm shall be abandoned and backfilled.
- E. Observation wells shall consist of a standpipe or riser of minimum 1.0-inch inside diameter and a minimum three (3) foot long well-point screen or slotted PVC section at the bottom. Observation wells shall be installed as follows:
1. Employ the jetting method for all observation wells except those within ten feet of existing structures, piping or utilities.
  2. Employ Case Boring Techniques for all observation wells within ten feet of existing structures, piping, or utilities and backfill the annulus between the well point or riser and the natural soil with a free-flowing granular material similar to Ottawa Sand.
- F. Test observation wells by adding or removing water from the riser to demonstrate their proper functioning.

### 3.05 DEWATERING PROCEDURE

- A. Following soldier pile installation and dewatering system installation and testing and prior to excavation, place the dewatering system into operation and lower the water level.
- B. Schedule the dewatering work to coordinate with all the other related work such as excavation, sheeting and tiebacks, pouring of concrete walls and slabs, and any other operations by other Contractors that might be affected by this work.
- C. Test the standby dewatering system with the following procedures:
  1. Shut off the primary power source and demonstrate that the standby power can be activated prior to the groundwater level rising to within one (1) foot of the bottom of base slab elevation and that the standby power source is adequate to draw the groundwater level back down to the Contractor's design depth or to the minimum required depths.

2. Shut off one segment of the system and show that redundant components can be activated prior to the groundwater level rising to within one (1) foot of the bottom of base slab elevation and that the system is adequate to draw the groundwater level back down to the Contractor's design depth or to the minimum required depths.
  3. If the dewatering system fails to meet either performance requirement, the Contractor shall draw the groundwater level to a greater depth, add wells, or modify the system such that it will be in conformance with these requirements when retested.
- D. Operate the dewatering system continuously twenty-four (24) hours per day, seven (7) days per week until all structures have been satisfactorily constructed, including placement of fill materials, and no longer require dewatering.

### 3.06 MONITORING

- A. Measure the piezometric water levels to the nearest one-tenth foot in all observation wells and submit the readings daily.
- B. Measure the concentration of suspended material in the discharge water of each well once every two days. Wells which exceed the acceptable level of solids concentration shall be replaced.
- C. Test the performance of the standby system and all components by demonstrating that the system is operational at least every two weeks.
- D. Test the observation wells every two weeks by adding and removing water from the risers to demonstrate their proper functioning.
- E. Observation wells that become inoperable shall be immediately replaced while construction is halted if the Engineer determines that the observation well is critical.
- F. Remove and add riser pipe of each observation well located within the excavation as construction progresses until the well conflicts with the structure. When the conflict occurs, abandon the observation well, fill it with grout, and cut the riser off at grade.
- G. In the event of a dewatering system failure, take the following steps:
  1. Conduct in situ density tests conforming to ASTM D1556 or ASTM D2167 immediately above the structure founding grades.
  2. Remove all soils that show unacceptable density and replace them with compacted fill as indicated in Section 02200, Earthwork.
  3. Test the repaired soils as required by the Owner and Engineer to verify that they have been returned to their original in situ state or better.
  4. Repair or replace damaged structures.

### 3.07 REWATERING AND REMOVAL OF DEWATERING SYSTEM

- A. Obtain written approval from the Owner and Engineer to begin rewatering operations.

- B. Provide an adequate weight of fill to prevent buoyancy.
- C. Pump water into the excavation such that the water level inside the excavation is always at a higher level than the rising groundwater on the outside until the groundwater level has reached its static level.
- D. Remove all dewatering wells, buried and surface piping, cables, pump foundations, structural supports and all other support facilities.
- E. Backfill as specified in Section 02200, Earthwork, all trenches and excavations below final grades or in fill areas.
- F. Provide documentation of dewatering and observation well removal including the date of removal, well number, location, procedures, and materials used.

- END OF SECTION -

THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Furnish all labor, equipment and materials required to complete all work associated with excavation, including off-site borrow excavation, dewatering, backfill, drainage layers beneath and around structures, foundation and backfill stone, filter fabric, embankments, stockpiling topsoil and any excess suitable material in designated areas, in place compaction of embankments, backfill and subgrades beneath foundations and roadways, excavation support, disposing from the site all unsuitable materials, providing erosion and sedimentation control grading, site grading and preparation of pavement and structure subgrade, and other related and incidental work as required to complete the work shown on the Drawings and specified herein.
- B. All excavations shall be in conformity with the lines, grades, and cross sections shown on the Drawings or established by the Engineer.
- C. It is the intent of this Specification that the Contractor conduct the construction activities in such a manner that erosion of disturbed areas and off-site sedimentation be absolutely minimized.
- D. All work under this Contract shall be done in conformance with and subject to the limitations of the latest editions of the Kentucky Standard Specifications for Roads and Structures and the Kentucky Erosion and Sediment Control Planning and Design Manual.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of the other requirements of the Specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced Specifications, codes, and standards refer to the most current issue available at the time of Bid.
  - 1. Kentucky Standard Specifications for Roads and Structures, latest edition.
  - 2. American Society for Testing and Materials (ASTM):
    - ASTM C 127 Test for Specific Gravity and Absorption of Coarse Aggregate.
    - ASTM C 136 Test for Sieve Analysis of Fine and Coarse Aggregates.
    - ASTM D 422 Particle Size Analysis of Soils.
    - ASTM D 423 Test for Liquid Limit of Soils.
    - ASTM D 424 Test for Plastic Limit and Plasticity Index of Soils.
    - ASTM C 535 Test for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.



ASTM D 698 Standard Method of Test for the Moisture - Density Relations of Soils Using a 5.5 lb. (2.5 kg) Rammer and a 12-inch (305 mm) Drop.

ASTM D1556 Test for Density of Soil in Place by the Sand-Cone Method.

ASTM D1557 Test for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lbs. (4.5 kg) Rammer and 18-inch (457 mm) Drop.

ASTM D2049 Test Method for Relative Density of Cohesionless Soils.

ASTM D2167 Test for Density of Soil in Place by the Rubber-Balloon Method.

ASTM D2216 Test for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil Aggregate Mixtures.

ASTM D2487 Test for Classification of Soils for Engineering Purposes.

ASTM D2922 Test for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

#### 1.03 SUBSURFACE CONDITIONS

- A. Information on subsurface conditions is referenced under Division 1, General Requirements.
- B. Attention is directed to the fact that there may be water pipes, storm drains and other utilities located in the area of proposed excavation. Perform all repairs to same in the event that excavation activities disrupt service.

#### 1.04 SUBMITTALS

- A. In accordance with the procedures and requirements set forth in Section 01300 - Submittals, the Contractor shall submit the following:
  - 1. Name and location of all material suppliers.
  - 2. Certificate of compliance with the standards specified above for each source of each material.
  - 3. List of disposal sites for waste and unsuitable materials and all required permits for use of those sites.
  - 4. Plans and cross sections of open cut excavations showing side slopes and limits of the excavation at grade.
  - 5. Samples of synthetic filter fabric and reinforced plastic membrane with manufacturer's certificates or catalog cuts stating the mechanical and physical properties. Samples shall be at least one (1) foot wide and four (4) feet long taken across the roll with the warp direction appropriately marked.
  - 6. Construction drawings and structural calculations for any types of excavation support required. Drawings and calculations shall be sealed by a currently registered Professional Engineer in the State of Kentucky.

7. Monitoring plan and pre-construction condition inspection and documentation of all adjacent structures, utilities, and roadways near proposed installation of excavation support systems.

8. Dewatering procedures.

#### 1.05 PRODUCT HANDLING

- A. Soil and rock material shall be excavated, transported, placed, and stored in a manner so as to prevent contamination, segregation and excessive wetting. Materials which have become contaminated or segregated will not be permitted in the performance of the work and shall be removed from the site.

### PART 2 - PRODUCTS

#### 2.01 SELECT FILL

- A. Soils from the excavations meeting requirements stipulated herein with the exceptions of topsoil and organic material may be used as select fill for backfilling, constructing embankments, reconstructing existing embankments, and as structural subgrade support.
- B. Select fill used for embankment construction shall be a silty or clayey soil material with a Maximum Liquid Limit (LL) of 50 and a Plasticity Index (PI) between 7 and 20.
- C. Select fill used for backfilling shall either be material as described in Paragraph B above or a granular soil material with a Maximum Plasticity Index (PI) of 6.
- D. Regardless of material used as select fill, materials shall be compacted at a moisture content satisfactory to the Engineer, which shall be approximately that required to produce the maximum density except that the moisture content shall not be more than 2% below nor more than 3% above the optimum moisture content for the particular material tested in accordance with the ASTM D698.
- E. Select fill used as subgrade support shall be a coarse aggregate material meeting the gradation requirements of #57 or #78 aggregates in accordance with ASTM C-33 or Kentucky Standard Specifications for Roads and Bridges. Excavated soils deemed suitable by the Engineer may be used as backfill beneath structures. Regardless of the material used, the backfill shall be compacted as required by these specifications.
- F. Where excavated material does not meet requirements for select fill, Contractor shall furnish off-site borrow material meeting the specified requirements herein. Determination of whether the borrow material will be paid for as an extra cost will be made based on Article 4 of the General Conditions, as amended by the Supplementary Conditions. When the excavated material from required excavations is suitable for use as backfill, bedding, or embankments, but is replaced with off-site borrow material for the Contractor's convenience, the costs associated with such work and material shall be borne by the Contractor.

#### 2.02 TOPSOIL

- A. Topsoil shall be considered the surface layer of soil and sod, suitable for use in seeding and planting. It shall contain no mixture of refuse or any material toxic to plant growth.

## PART 3 - EXECUTION

### 3.01 STRIPPING OF TOPSOIL

- A. In all areas to be excavated, filled, paved, or graveled the topsoil shall be stripped to its full depth and shall be deposited in storage piles on the site, at locations designated by the Engineer, for subsequent reuse. Topsoil shall be kept separated from other excavated materials and shall be piled free of roots and other undesirable materials.
- B. Topsoil shall not be removed from the site and unless otherwise instructed by the Engineer or Owner, should not be moved from one property to another.

### 3.02 EXCAVATION

- A. All material excavated, regardless of its nature or composition, shall be classified as UNCLASSIFIED EXCAVATION. Excavation shall include the removal of all soil, rock, weathered rock, rocks of all types, boulders, conduits, pipe, and all other obstacles encountered and shown to be removed within the limits of excavation shown on the Drawings or specified herein. The cost of excavation shall be included in the Lump Sum Bid Price and no additional payment will be made for the removal of obstacles encountered within the excavation limits shown on the Drawings and specified herein. Excavation by blasting methods is not permitted.
- B. All suitable material removed in the excavation shall be used as far as practicable in the formation of embankments, subgrades, and shoulders, and at such other places as may be indicated on the Drawings or indicated by the Engineer. No excavation shall be wasted except as may be permitted by the Engineer. Refer to the drawings for specific location and placement of suitable excavated materials in the formation of embankments, backfill, and structural and roadway foundations. THE ENGINEER WILL DESIGNATE MATERIALS THAT ARE UNSUITABLE. The Contractor shall furnish off site disposal areas for the unsuitable material. Where suitable materials containing excessive moisture are encountered above grade in cuts, the Contractor shall construct above grade ditch drains prior to the excavation of the cut material when in the opinion of the Engineer such measures are necessary to provide proper construction.
- C. All excavations shall be made in the dry and in such a manner and to such widths as will give ample room for properly constructing and inspecting the structures and/or piping they are to contain and for such excavation support, pumping and drainage as may be required. Excavation shall be made in accordance with the grades and details shown on the Drawings and as specified herein.
- D. Excavation slopes shall be flat enough to avoid slides that will cause disturbance of the subgrade or damage of adjacent areas. Excavation requirements and slopes shall be as indicated in the Drawings. The Contractor shall intercept and collect surface runoff both at the top and bottom of cut slopes. The intersection of slopes with natural ground surfaces, including the beginning and ending of cut slopes, shall be uniformly rounded as shown on the Drawings or as may be indicated by the Engineer. Concurrent with the excavation of cuts the Contractor shall construct intercepting berm ditches or earth berms along and on top of the cut slopes at locations shown on the Drawings or designated by the Engineer. All slopes shall be finished to reasonably uniform surfaces acceptable for seeding and mulching operations. No rock or boulders shall be left in place which protrude more than 1 foot within the typical section cut slope lines, and all rock cuts shall be cleaned of loose and overhanging material. All protruding roots and other objectionable vegetation shall be

removed from slopes. The Contractor shall be required to submit plans of open-cut excavation for review by the Engineer before approval is given to proceed.

- E. It is the intent of these Specifications that all structures shall bear on an aggregate base, crushed stone or screened gravel bedding placed to the thickness shown on the Drawings, specified in these Specifications, or not less than 6-inches. Bedding for process piping shall be as specified or as shown on the Drawings.
- F. The bottom of all excavations for structures and pipes shall be examined by the Engineer for bearing value and the presence of unsuitable material. If, in the opinion of the Engineer, additional excavation is required due to the low bearing value of the subgrade material, or if the in-place soils are soft, yielding, pumping and wet, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted select fill, and/or crushed stone or screened gravel as indicated by the Engineer. Payment for such additional work ordered by the Engineer shall be made as an extra by a Change Order in accordance with the General Conditions and Division 1. No payment will be made for subgrade disturbance caused by inadequate dewatering or improper construction methods.
- G. All cuts shall be brought to the grade and cross section shown on the Drawings, or established by the Engineer, prior to final inspection and acceptance by the Engineer.
- H. Slides and overbreaks which occur due to negligence, carelessness or improper construction techniques on the part of the Contractor shall be removed and disposed of by the Contractor as indicated by the Engineer at no additional cost to the Owner. If grading operations are suspended for any reason whatsoever, partially completed cut and fill slopes shall be brought to the required slope and the work of seeding and mulching or other required erosion and sedimentation control operations shall be performed.
- I. Where the excavation exposes sludge, sludge contaminated soil or other odorous materials, the Contractor shall cover such material at the end of each workday with a minimum of 6-inches and a maximum of 24-inches of clean fill. The work shall be an odor abatement measure and the material shall be placed to the depth deemed satisfactory by the Engineer for this purpose.

### 3.03 EXCAVATION SUPPORT

- A. The Contractor shall furnish, place, and maintain such excavation support which may be required to support sides of excavation or to protect pipes and structures from possible damage and to provide safe working conditions. If the Engineer is of the opinion that at any point sufficient or proper supports have not been provided, he may order additional supports put in at the expense of the Contractor. The Contractor shall be responsible for the adequacy of all supports used and for all damage resulting from failure of support system or from placing, maintaining and removing it.
- B. Selection of and design of any proposed excavation support systems is exclusively the responsibility of the Contractor. Contractor shall submit drawings and calculations on proposed systems sealed by a Professional Engineer currently registered in the State of Kentucky.
- C. The Contractor shall exercise caution in the installation and removal of supports to insure that excessive or unusual loadings are not transmitted to any new or existing structure. The Contractor shall promptly repair at his expense any and all damage that can be reasonably attributed to installation or removal of excavation support system.

- D. Contractor shall monitor movement in the excavation support systems as well as movement at adjacent structures, utilities and roadways near excavation supports. Contractor shall submit a monitoring plan developed by the excavation support design engineer. All pre-construction condition assessment and documentation of adjacent structures on-site and off-site shall be performed by the Contractor. If any sign of distress such as cracking or movement occurs in any adjacent structure, utility or roadway during installation of supports, subsequent excavation, service period of supports, subsequent backfill and construction, or removal of supports, Engineer shall be notified immediately. Contractor shall be exclusively responsible for any damage to any roadway, structure, utility, pipes, etc. both on-site and off-site, as a result of his operations.
- E. All excavation supports shall be removed upon completion of the work except as indicated herein. The Engineer may permit supports to be left in place at the request and expense of the Contractor. The Engineer may order certain supports left permanently in place in addition to that required by the Contract. The cost of the materials so ordered left in place, less a reasonable amount for the eliminated expense of the removal work omitted, will be paid as an extra by a Change Order in accordance with the General Conditions and Division 1. Any excavation supports left in place shall be cut off at least two (2) feet below the finished ground surface or as directed by the Engineer.

#### 3.04 PROTECTION OF SUBGRADE

- A. To minimize the disturbance of bearing materials and provide a firm foundation, the Contractor shall comply with the following requirements:
  - 1. Use of heavy rubber-tired construction equipment shall not be permitted on the final subgrade unless it can be demonstrated that drawdown of groundwater throughout the entire area of the structure is at least 3 feet below the bottom of the excavation (subgrade). Even then, the use of such equipment shall be prohibited should subgrade disturbance result from concentrated wheel loads.
  - 2. Subgrade soils disturbed through the operations of the Contractor shall be excavated and replaced with compacted select fill or crushed stone at the Contractor's expense as indicated by the Engineer.
  - 3. The Contractor shall provide positive protection against penetration of frost into materials below the bearing level during work in winter months. This protection can consist of a temporary blanket of straw or salt hay covered with a plastic membrane or other acceptable means.

#### 3.05 PROOFROLLING

- A. The subgrade of all structures and all areas that will support pavements or select fill shall be proofrolled. After stripping of topsoil, excavation to subgrade and prior to placement of fills, the exposed subgrade shall be carefully inspected by probing and testing as needed. Any topsoil or other organic material still in place, frozen, wet, soft, or loose soil, and other undesirable materials shall be removed. The exposed subgrade shall be proofrolled with a heavily loaded tandem-wheeled dump truck to check for pockets of soft material hidden beneath a thin crust of better soil. Any unsuitable materials thus exposed shall be removed and replaced with an approved compacted material.

### 3.06 DEWATERING

- A. The Contractor shall do all dewatering as required for the completion of the work. Procedures for dewatering proposed by the Contractor shall be submitted to the Engineer for review prior to any earthwork operations. All water removed by dewatering operations shall be disposed of in accordance with the Kentucky Erosion Prevention & Sedimentation Field Guide.
- B. The dewatering system shall be of sufficient size and capacity as required to control groundwater or seepage to permit proper excavation operations, embankment construction and reconstruction, subgrade preparation, and to allow concrete to be placed in a dry condition. The system shall include a sump system or other equipment, appurtenances and other related earthwork necessary for the required control of water. The Contractor shall drawdown groundwater to at least 3 feet below the bottom of excavations (subgrade) at all times in order to maintain a dry and undisturbed condition.
- C. The Contractor shall control, by acceptable means, all water regardless of source. Water shall be controlled and its disposal provided for at each berm, structure, etc. The entire periphery of the excavation areas shall be ditched and diked to prevent water from entering the excavation. The Contractor shall be fully responsible for disposal of the water and shall provide all necessary means at no additional expense to the Owner. The Contractor shall be solely responsible for proper design, installation, proper operation, maintenance, and any failure of any component of the system.
- D. The Contractor shall be responsible for and shall repair without cost to the Owner, any damage to work in place and the excavation, including damage to the bottom due to heave and including removal of material and pumping out of the excavated area. The Contractor shall be responsible for damages to any other area or structure caused by his failure to maintain and operate the dewatering system proposed and installed by the Contractor.
- E. The Contractor shall take all the steps that he considers necessary to familiarize himself with the surface and subsurface site conditions, and shall obtain the data that is required to analyze the water and soil environment at the site and to assure that the materials used for the dewatering systems will not erode, deteriorate, or clog to the extent that the dewatering systems will not perform properly during the period of dewatering.
- F. Prior to the execution of the work, the Contractor, Owner and Engineer shall jointly survey the condition of adjoining structures. Photographs and records shall be made of any prior settlement or cracking of structures, pavements, and the like, that may become the subject of possible damage claims.

### 3.07 EMBANKMENTS

- A. The Contractor shall perform the construction of embankments in such a manner that cut and fill slopes will be completed to final slopes and grade in a continuous operation. The operation of removing excavation material from any cut and the placement of embankment in any fill shall be a continuous operation to completion unless otherwise permitted by the Engineer.
- B. Surfaces upon which embankments are to be constructed shall be stripped of topsoil, organic material, rubbish and other extraneous materials. After stripping and prior to placing embankment material, the Contractor shall compact the top 12-inches of in place soil as specified under Paragraph 3.09, COMPACTION.

- C. Any soft or unsuitable materials revealed before or during the in place compaction shall be removed as indicated by the Engineer and replaced with select fill.
- D. Ground surfaces on which embankment is to be placed, shall be scarified or stepped in a manner which will permit bonding of the embankment with the existing surface. The embankment soils shall be as specified under Part 2 - Products, and shall be deposited and spread in successive, uniform, approximately horizontal layers not exceeding 8-inches in compacted depth for the full width of the cross section, and shall be kept approximately level by the use of effective spreading equipment. Hauling shall be distributed over the full width of the embankment, and in no case will deep ruts be allowed to form during the construction of the embankment. The embankment shall be properly drained at all times. Each layer of the embankment shall be thoroughly compacted to the density specified under Paragraph 3.09, COMPACTION.
- E. The embankment or fill material in the layers shall be of the proper moisture content before rolling to obtain the prescribed compaction. Wetting or drying of the material and manipulation when necessary to secure a uniform moisture content throughout the layer shall be required. Should the material be too wet to permit proper compaction or rolling, all work on all portions of the embankment thus affected shall be delayed until the material has dried to the required moisture content. Samples of all embankment materials for testing, both before and after placement and compaction, will be taken at frequent intervals. From these tests, corrections, adjustments, and modifications of methods, materials, and moisture content will be made to construct the embankment.
- F. Where embankments are to be placed and compacted on hillsides, or when new embankment is to be compacted against embankments, or when embankment is built in part widths, the slopes that are steeper than 4:1 shall be loosened or plowed to a minimum depth of 6 inches or, if in the opinion of the Engineer, the nature of the ground is such that greater precautions should be taken to bind the fill to the original ground then benches shall be cut in the existing ground as indicated by Engineer.
- G. When rock and other embankment material are excavated at approximately the same time, the rock shall be incorporated into the outer portions of the embankments and the other material which meets the requirements for select fill shall be incorporated into the formation of the embankments. Stones or fragmentary rock larger than 4-inches in their greatest dimension will not be allowed within the top 6-inches of the final grade. Stones, fragmentary rock, or boulders larger than 12-inches in their greatest dimension will not be allowed in any portions of embankments and shall be disposed of by the Contractor as indicated by the Engineer. When rock fragments or stone are used in embankments, the material shall be brought up in layers as specified or directed and every effort shall be exerted to fill the voids with finer material to form a dense, compact mass which meets the densities specified for embankment compaction.

### 3.08 BACKFILLING

- A. All structures and pipes shall be backfilled with the type of materials shown on the Drawings. Select fill shall be deposited in successive, uniform, approximately horizontal layers not exceeding 8-inches in compacted depth for the full width. Stones or fragmentary rock larger than 4-inches in their greatest dimension will not be allowed within the top 6-inches of the ground nor within 6 inches of pipes. No stone or fragmentary rock larger than 12-inches in their greatest dimension will be allowed for any portion of backfill. Compaction shall be in accordance with the requirements of Paragraph 3.09, COMPACTION.

- B. Where excavation support is used, the Contractor shall take all reasonable measures to prevent loss of support beneath and adjacent to pipes and existing structures when supports are removed. If significant volumes of soil cannot be prevented from clinging to the extracted supports, the voids shall be continuously backfilled as rapidly as possible. The Contractor shall thereafter limit the depth below subgrade that supports will be installed in similar soil conditions or employ other appropriate means to prevent loss of support.
- C. All lean clay backfill shall be compacted with lightweight compaction equipment in 4-inch to 6-inch lifts to at least 95 percent of the standard Proctor maximum dry density (ASTM D698). The moisture content of the lean clay at the time of compaction shall be between the optimum moisture content and 2 percent above the optimum moisture content. The top 2 feet of backfill shall consist of clayey soils so as to minimize surface water infiltration.

### 3.09 COMPACTION

- A. The Contractor shall compact embankments, backfill, crushed stone, aggregate base, and in place subgrade in accordance with the requirements of this Section. The densities specified herein refer to percentages of maximum density as determined by the noted test methods. Compaction of materials on the project shall be in accordance with the following schedule:

	Density % Std. Proctor (D698)	Density % Mod. Proctor (D1557)	Max. Lift Thickness as Compacted Inches
Embankments Beneath Structures*	98	95	8
Other Embankments	95	92	8
Backfill Around Structures	95	92	8
Backfill in Pipe Trenches	95	92	8
Crushed Stone Beneath Structures	**	**	12
Select Sand	--	98	8
Aggregate Base Course (ABC) Beneath Pavements and Structures	--	98	8
Crushed Stone Backfill	**	**	12
Crushed Stone Pipe Bedding	**	**	12
In place Subgrade Beneath Structures	98	95	Top 12-inches

\* Embankments beneath structures shall be considered to include a zone 10 feet out from the foundation of the structure extending down to the natural ground on a 45° slope.

\*\* The aggregate shall be compacted to a degree acceptable to the Engineer by use of a vibratory compactor and/or crawler tractor.

- B. Field density tests will be made by the Engineer to determine if the specified densities have been achieved, and these tests shall be the basis for accepting or rejecting the compaction. In-place density tests will be performed in accordance with ASTM D 1556, ASTM D 2167, or ASTM D 2922. The Engineer will be the sole judge as to which test method will be the most appropriate. Failure to achieve the specified densities shall require the Contractor to



re-compact the material or remove it as required. The Contractor shall, if necessary, increase his compactive effort by increasing the number of passes, using heavier or more suitable compaction equipment, or by reducing the thickness of the layers. The Contractor shall adjust the moisture contents of the soils to bring them within the optimum range by drying them or adding water as required.

- C. Testing will be performed as frequently as deemed necessary by the Engineer. As a minimum, one in-place density test shall be performed for each 1000 cubic yards of embankment placed and 500 cubic yards of backfill placed or one test performed each day for either.

### 3.10 REMOVAL OF EXCESS AND UNSUITABLE MATERIALS

- A. The Contractor shall remove and dispose of off-site all unsuitable materials. Within thirty (30) consecutive days after Notice to Proceed, the Contractor shall submit to the Engineer for review all required permits and a list of disposal sites for the unsuitable materials. If the disposal site is located on private property, the submittal shall also include written permission from the owner of record.
- B. All unsuitable materials shall be disposed of in locations and under conditions that comply with federal, state and local laws and regulations.
- C. The Contractor shall obtain an off-site disposal area prior to beginning demolition or excavation operations.
- D. All excess and unsuitable materials shall be hauled in trucks of sufficient capacity and tight construction to prevent spillage. Trucks shall be covered to prevent the propagation of dust.
- E. When all excess and unsuitable material disposal operations are completed, the Contractor shall leave the disposal sites in a condition acceptable to the Owner and Owner(s) of the disposal site(s).
- F. The 'Agreement to Accept Clean Fill' form located at the end of this section and shall be completed and a copy returned to the Owner prior to hauling and dumping spoil fill on private property.

### 3.11 BORROW EXCAVATION

- A. Description

The work covered by this section consists of the excavation of approved material from borrow sources and the hauling and utilization of such material as required on the Drawings or directed by the Engineer. It shall also include the removing, stockpiling, and replacement of topsoil on the borrow source; the satisfactory disposition of material from the borrow source which is not suitable for use; and the satisfactory restoration of the borrow source and haul roads to an acceptable condition upon completion of the work.

Borrow excavation shall not be used before all available suitable unclassified excavation has been used for backfill and incorporated into the embankments.

- B. Coordination with Seeding Operations

The Contractor shall coordinate the work covered by this section with the construction of

embankments so that the requirements of Section 02200 are met.

C. Materials

All material shall meet the requirements of Division 2 shown below:

Borrow Material Section 02200, Subsection 2.01 - Select Fill

D. Construction Methods

1. General

The surface of the borrow area shall be thoroughly cleared and grubbed and cleaned of all unsuitable material including all organics, topsoil, etc., before beginning the excavation. Disposal of material resulting from clearing and grubbing shall be in accordance with the Contract Documents.

Each borrow operation shall not be allowed to accumulate exposed, erodible slope area in excess of 1 acre at any one given time without the Contractor's beginning permanent seeding and mulching of the borrow source or other erosion control measures as may be approved by the Engineer.

The topsoil shall be removed and stockpiled at locations that will not interfere with the borrow operations and that meet the approval of the Engineer. Temporary erosion control measures shall be installed as may be necessary to prevent the erosion of the stockpile material. Once all borrow has been removed from the source or portion thereof, the stockpiled topsoil shall be spread uniformly over the source.

Where it is necessary to haul borrow material over existing roads, the Contractor shall use all necessary precautions to prevent damage to the existing roads. The Contractor shall also conduct his hauling operations in such a manner as to not interfere with the normal flow of traffic and shall keep the traffic lanes free from spillage at all times.

2. Owner Furnished Sources

Where borrow sources are furnished by the Owner the location of such sources will be as designated on the Drawings or as directed by the Engineer.

The Owner will furnish the necessary haul road right-of-way at locations designated by the Engineer. All haul roads required shall be built, maintained, and when directed by the Engineer, obliterated, at no cost to the Owner. Where the haul road is to be reclaimed for cultivation the Contractor shall plow or scarify the area to a minimum depth of 8 inches.

The borrow sources shall be left in a neat and presentable condition after use. All slopes shall be smoothed, rounded, and constructed not steeper than 3:1. Where the source is to be reclaimed for cultivation the source shall be plowed or scarified to a minimum depth of 8 inches, disc harrowed, and terraces constructed. The source shall be graded to drain such that no water will collect or stand and a functioning drainage system shall be provided.

### 3. Contractor Furnished Sources

Prior to the approval of any off-site borrow source(s) developed for use on this project, the Contractor shall obtain certification from the State Historic Preservation Officer of the State Department of Cultural Resources certifying that the removal of the borrow material from the borrow source(s) will have no effect on any known district, site building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places. A copy of this certification shall be furnished to the Engineer prior to performing any work on the proposed borrow source.

The approval of borrow sources furnished by the Contractor shall be subject to the following conditions:

- a. The Contractor shall be responsible for acquiring the right to take the material and any rights of access that may be necessary; for locating and developing the source; and any clearing and grubbing and drainage ditches necessary.

Such right shall be in writing and shall include an agreement with the Owner that the borrow source may be dressed, shaped, seeded, mulched, and drained as required by these Specifications after all borrow has been removed.

- b. Except where borrow is to be obtained from a commercial source, the Contractor and the property owner shall jointly submit a borrow source development, use, and reclamation plan to the Engineer for his approval prior to engaging in any land disturbing activity on the proposed source other than material sampling that may be necessary. The Contractor's plan shall address the following:

#### (1) Drainage

The source shall be graded to drain such that no water will collect or stand and a functioning drainage system shall be provided. If drainage is not practical, and the source is to serve as a pond, the minimum average depth below the water table shall be 4 feet or the source graded so as to create wetlands as appropriate.

#### (2) Slopes

The source shall be dressed and shaped in a continuous manner to contours which are comparable to and blend in with the adjacent topography, but in no case will slopes steeper than 3:1 be permitted.

#### (3) Erosion Control

The plan shall address the temporary and permanent measures that the Contractor intends to employ during use of the source and as a part of the reclamation. The Contractor's plan shall provide for the use of staged permanent seeding and mulching on a continual basis while the source is in use and the immediate total reclamation of the source when no longer needed.

4. Maintenance

During construction and until final acceptance the Contractor shall use any methods approved by the Engineer which are necessary to maintain the work covered by this section so that the work will not contribute to excessive soil erosion.

3.12 AGREEMENT TO ACCEPT CLEAN FILL

- A. IN THE EVENT THAT EXCESS MATERIAL IS PLACED ON PRIVATE PROPERTY, THE FORM ON THE FOLLOWING PAGE SHALL BE USED AND COMPLETED BY THE CONTRACTOR PRIOR TO PLACEMENT OF ANY EXCESS MATERIAL FROM THE CONSTRUCTION SITE. COPIES SHALL BE PROVIDED TO THE PROPERTY OWNER, THE CONTRACTOR, LFUCG-DWQ, AND THE ENGINEER.

AGREEMENT TO ACCEPT CLEAN FILL

I, \_\_\_\_\_ (Property Owner), for the amount of One Dollar (\$1.00) and other good and valuable consideration, hereby agree to accept excess clean fill (rock, soil, concrete or bricks) for placement on my property at \_\_\_\_\_, \_\_\_\_\_ (City), Kentucky, by \_\_\_\_\_ (Contractors Name); which clean fill was excavated during the \_\_\_\_\_ Project. I hereby release the LFUCG and \_\_\_\_\_ (Engineer), and their officers, employees and agents, from any and all responsibility and liability arising out of the placement of this fill on my property, including but not limited to responsibility and/or liability for any material found within the clean fill that may be deemed unsafe or hazardous. The Contractor hereby affirms that all material that will be placed on my property has been appropriately inspected and tested, and to the best of Contractor's knowledge does not contain any hazardous substances or materials. The Property Owner and the Contractor agree that the clean fill will be placed in compliance with the applicable federal, state and local laws, regulations and ordinances.

Property Owner

Contractor

\_\_\_\_\_  
Print Name: \_\_\_\_\_

\_\_\_\_\_  
Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Address

Address

\_\_\_\_\_  
\_\_\_\_\_  
Telephone No.: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
Telephone No.: \_\_\_\_\_

END OF SECTION

SECTION 02207

AGGREGATE MATERIALS

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall furnish all labor, equipment and materials required to complete all work associated with the installation of aggregate material beneath foundations, as backfill and as roadway subgrades and other related and incidental work as required to complete the work shown on the Drawings and specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01090 - Reference Standards
- B. Section 02200 - Earthwork
- C. Section 02372 - Erosion and Sedimentation Control
- D. Section 02910 - Final Grading and Landscaping

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the other requirements of the Specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.
  - 1. Kentucky Department of Highways (KYTC) Standard Specifications for Roads and Bridge Construction.
  - 2. ASTM C 127 Test for Specific Gravity and Absorption of Coarse Aggregate.
  - 3. ASTM C 136 Test for Sieve Analysis of Fine and Coarse Aggregates.
  - 4. ASTM C 535 Test for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals.
  - 1. Materials gradation and certification.
  - 2. ASTM C127, ASTM C136, and ASTM C535 test results

PART 2 -- PRODUCTS

2.01 CRUSHED STONE, SCREENED GRAVEL and AGGREGATE BASE COURSE (ABC)

- A. Crushed stone or screened gravel shall meet the requirements of Aggregate Standard Size No. 57 or No. 67 as defined by KYTC Standard Specifications.
- B. ABC shall meet the requirements of ABC as defined by KYTC Standard Specifications.

2.02 SELECT SAND

- A. Select sand shall meet the requirements of Sections 1005 and 1014 of the KYTC Standard Specifications for materials and gradation. The size used shall be Standard Size No. 2S or 2MS as listed and defined in Table 1005-2, "Aggregate Gradation", of the KYTC Standard Specifications.

PART 3 -- EXECUTION

3.01 CRUSHED STONE, SCREENED GRAVEL AND AGGREGATE BASE COURSE (ABC)

- A. Contractor shall install crushed stone, screened gravel and ABC in accordance with the KYTC Standard Specifications and as shown on the Drawings and indicated in the Contract Documents.
  - 1. Unless otherwise stated herein or shown on the Drawings, all mat foundations (bottom slabs) for the proposed structures shall have a blanket of crushed stone or ABC 6-inches thick minimum placed directly beneath the proposed mat. The blanket shall extend a minimum of 12 inches beyond the extremities of the mat.
  - 2. For subgrade preparation at structures and structural fill, the foundation material shall be ABC where specifically specified on Drawings, otherwise, crushed stone or screened gravel shall be used.
  - 3. For ground under drains, pipe bedding, and drainage layers beneath structures the coarse aggregate shall meet the requirements of aggregate standard Size No. 57 or No. 67, as defined by KYTC Standard Specifications.

3.02 SELECT SAND

- A. Contractor shall install select sand in accordance with the KYTC Standard Specifications and as shown on the Drawings and indicated in the Contract Documents.

- END OF SECTION -

SECTION 02216

ROCK ANCHORS

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The work described in this section includes furnishing, installing and testing rock anchors, including all labor necessary to perform and complete such construction, all materials and equipment incorporated in such construction, all services, facilities, tools and equipment necessary or used to perform and complete such construction

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02200 - Earthwork
- B. Section 03300 - Cast-in-Place Concrete
- C. Section 03600 - Grout

1.03 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced, and include the most recent revisions and addenda thereto:
  - 1. American Society Testing and Materials (ASTM)
    - a. A 722 Standard Specification for Uncoated High-Strength Steel Bars for Prestressing Concrete
    - b. C 138 Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
    - c. C 942 Standard Test Method for Compressive Strength of Grouts for Preplaced Aggregate Concrete in the Laboratory
  - 2. Post-Tensioning Institute, "Recommendations for Prestressed Rock and Soil Anchors," Latest Edition.

1.04 SYSTEM DESCRIPTION

- A. All aspects of rock anchors including materials, design, construction, and testing shall conform to "Recommendations for Prestressed Rock and Soil Anchors" as published by the Post-Tensioning Institute.
- B. All safety factors shall meet the requirements of "Recommendations for Prestressed Rock and Soil Anchors" and shall conform to the following:
  - 1. The safety factor of the anchor tendon at the design load shall be 1.67, minimum.



2. The safety factor for the interface of the rock and the grout shall be 2.00, minimum. The allowable grout to rock bond strength shall be 100 psi.
  3. The lock-off load shall not exceed 70% of the tensile strength of the steel comprising the anchor.
  4. The maximum test load shall not exceed 80% of the tensile strength of the steel comprising the anchor.
  5. The safety factor for calculating the resisting soil and rock mass engaged by the rock anchor shall be 1.25. The buoyant weight of soil and rock shall be used. Buoyant weight of rock is 103 pcf.
  6. The engaged rock mass shall be defined by inverted cones extending upward from the mid-point on the bond length. The inverted cones shall extend upward at an angle of 45 degrees to the vertical until they intersect; the bedrock surface, the inverted cones of adjacent rock anchors, or the perimeter of the clarifier.
- C. Complete design calculations and installation drawings shall be sealed by a Professional Engineer currently registered in the State of Kentucky.
- D. The bond length shall be designed by the Contractor to provide the specified capacity.

#### 1.05 SUBMITTALS

- A. The Contractor shall submit to the Engineer for approval all necessary data and details no later than 28 calendar days prior to the start of anchor installation. Submittals shall include the following:
1. Description of method and equipment to be used for installation and testing of anchors. Calibrations shall be certified by an independent testing lab within 3 months of use.
  2. Calibrations for load cells, jacks or other equipment to be used in tensioning or testing anchors. Calibrations shall be certified by an independent testing lab within 3 months of use.
  3. Detailed anchor information including fabrication, installation, and corrosion protection details. Provide a sample of each proposed anchor including all associated hardware.
  4. Material certifications for all grout components.
  5. Material certifications of steel components and anchor.
  5. The Contractor shall provide evidence that he has a minimum of five years experience with work comparable to the work shown and specified in this Section, employing key labor and supervisory personnel who are experienced in this type of work.
  6. Calculations of Contractor and manufacturer designed items sealed by a currently Registered Engineer in the State of Kentucky.

7. Sequence of construction.

B. After installation of the anchors, the Contractor shall submit as-built information as follows:

1. Tabulations of data for each anchor, including dates of drilling, grouting, testing, test data and final lock-off; free length, anchorage length, hole diameter, anchor size and type and its ultimate capacity, maximum test load, orientation and other pertinent data.
2. Test data (load-deflection curve) for each anchor.
3. Grout test data.
4. Anchor location plan.

#### 1.06 DELIVERY AND STORAGE OF MATERIALS

- A. Cement and Admixtures for Grout: Store materials covered, elevated above ground, and protected from moisture. Maintain temperatures consistent with the manufacturer's recommendations.
- B. Rock Anchor Components: Store and handle in a manner to avoid mechanical damage, corrosion, contamination with dirt or deleterious substances, and exposure to moisture and ultraviolet light.

### PART 2 -- PRODUCTS

#### 2.01 GENERAL

- A. All aspects of rock anchors including materials, design, construction, and testing shall conform to "Recommendations for Prestressed Rock and Soil Anchors" as published by the Post-Tensioning Institute.

#### 2.02 MATERIALS

- A. Anchors shall be high strength steel (150 ksi, ASTM A 722), threaded bars with Class I (double) corrosion protection. Diameter and length of anchor shall be as necessary to develop the design load for the anchor as shown on the Contract Drawings.
- B. Anchor plates and anchor nuts and other hardware shall conform to the manufacturer's standard hardware for the anchors installed. Nuts, washers, and anchor plates shall be capable of developing 95 percent of the ultimate tensile strength of the anchor.
- C. Grout materials, admixtures, and mix design for anchorage and encapsulation shall be submitted to the Engineer for approval. Grout shall be cement based consisting of cement, sand and water proportioned to obtain the required strength and consistency. Grout cube strength shall be a minimum of 4,000 psi at 3 days as tested in accordance with ASTM C942 by an independent testing agency retained and paid for by the Contractor. Provide one set of five cubes for every eight anchors. Wet density of the grout shall be determined in accordance with ASTM C138 or Mud Balance Testing in accordance with American Petroleum Institute (API) Recommended Practice (RP) 13B-1. Wet density testing shall be

performed by the Contractor for the first batch of grout each day and at least once per rock anchor thereafter.

- D. All materials used for the construction and installation of rock anchors including but not limited to couplers, centralizers, and spacers, washers, nuts, corrosion inhibiting compounds, plastic tubing, corrosion protection, heat shrink sleeves and tapes, and grout tubes and socks shall be submitted for approval.
- F. Rock anchors shall be Grout Bonded MCP II Anchors by Williams Form Engineering Corporation, Belmont, MI, Dywidag Threadbar Anchors with Double Corrosion Protection by DYWIDAG-Systems International, Bolingbrook, IL, or approved equal.
- G. Steel casing pipe shall be of the diameter and wall thickness shown on the Contract Drawings or as determined by the Contractor, and meeting the requirements of ASTM A53, Grade B, F<sub>y</sub> equal to 36,000 psi, ASTM A252 Grade 3, F<sub>y</sub> equal to 45,000 psi, API N-80, F<sub>y</sub> equal to 80,000 psi, or approved equal Casing segments shall be threaded with male and female ends to develop the full capacity of the casing section at joints.
- H. Grout socks shall be made from a woven synthetic fabric resistant to tears and handling damage The geotextile apparent opening size (ASTM D4751) shall be such that they will allow water to filter out of the grout but prevent a significant amount of cement particles to pass.

### PART 3 -- EXECUTION

#### 3.01 GENERAL

- A. Anchor installation and testing shall be in accordance with the manufacturer's recommendations and instructions.
- B. All anchors shall be installed and tested under the direct supervision of a qualified manufacturer's representative.

#### 3.02 INSTALLATION

- A. Holes for anchors shall be drilled by rotary or percussion methods or other methods determined appropriate for the given site conditions by the manufacturer and approved by the Engineer at the locations shown on the Drawings The holes shall extend to depth as needed to ensure anchor meets capacity shown on Contract Drawings Install casing to top of rock.
- B. After the hole has been drilled to its final depth, the hole shall be flushed and thoroughly cleaned by high pressure water introduced by a pipe extending to within 1/2 foot of the bottom of the hole Flushing shall continue until completely clean water returns to the surface from the casing Where fractured rock is encountered, water pressure testing shall be performed as indicated in "Recommendations for Prestressed Rock and Soil Anchors".
- C. Grout shall be placed in the anchor hole to the top of the hole prior to installing the bar The grout shall be placed using a motor driven pressurized pump connected to a grout pipe extending to the bottom of the hole The bottom of the grout pipe shall extend below the level of the grout in the hole at all times while the grout is being placed Gradually withdraw the

casing as the grout is placed keeping the bottom of the casing below the top of grout at all times.

- D. The anchor shall be free of rust and thoroughly cleaned prior to installation to remove any extraneous materials adhering to its surface Centering guides shall be attached to the anchor to ensure the bar is plumb and maintain the position of the anchor at the center of the hole The measured depth of the hole shall be clearly marked on the anchor, measured from its bottom end Immediately after grout has been pumped to the top of the hole, the anchor shall be inserted in the hole and, if necessary, driven until it reaches the bottom of the hole as indicated by the mark on the anchor The upper part of the anchor shall be protected against any vibration, impact or interference for a minimum of 48 hours after insertion to allow the grout to set.
- D. Anchor stressing shall not occur until grout has achieved a minimum compressive strength of 4,000 psi.
- E. After testing and lift-off readings are complete, the stressing tails shall be cut to the length indicated on the Drawings.

### 3.03 TESTING

- A. All testing shall be in accordance with requirements of "Recommendations for Prestressed Rock and Soil Anchors" by the Post-Tensioning Institute All testing shall be made in the presence of the Engineer and subject to his approval.
- B. Each anchor shall be tested in accordance with either a Performance Test or a Proof Test to verify and establish its capacity Performance Tests shall be performed on a minimum of three anchors per structure, and thereafter on 5 percent of all anchors at regular intervals Test data shall be submitted and approved prior to installation of remaining anchors All other anchors shall be proof tested.
- C. The performance test shall be performed by incrementally loading and unloading the anchor in accordance with the "Recommendations for Prestressed Rock and Soil Anchors" as published by the Post-Tensioning Institute At each increment, the movement of the end of the anchor bar shall be recorded in reference to an independent fixed reference point with a micrometer dial reading to 0.001 inch, and the loading maintained until the rate of movement is clearly approaching zero as plotted on a time deflection curve.
- D. The proof test shall be performed by incrementally loading the anchor in accordance with the "Recommendations for Prestressed Rock and Soil Anchors" as published by the Post-Tensioning Institute At each load increment, the movement of the end of the anchor shall be recorded with a micrometer dial reading to 0.001 inch and the load maintained until the rate of movement is clearly approaching zero as plotted on a time deflection curve and the change in the last five minute interval is less than 0.040 inch
- E. Where subgrade is soil or weathered rock, the Contractor shall erect temporary cribbing that bears on the ground surface for the purpose of testing the anchors The test loads shall be jacked against the cribbing.
- F. Acceptance Criteria for anchors shall be:

1. Creep rate at each load stabilizes and the total movement during the 10 minute maximum test load does not exceed 0.040 inch. If the load duration is extended to 60 minutes, the total movement shall not exceed 0.080 inch.
  2. The minimum apparent free stressing anchor length at the test load, as calculated on the basis of elastic movement, shall not be less than or equal to 80% of the designed free anchor length plus the jack length.
  3. The maximum apparent free stressing anchor length at the test load, as calculated on the basis of elastic movement, shall be less than 100% of the free anchor length plus 50% of the bond length plus the jack length.
  4. The initial lift-off reading shall be within 5% of the designed lock-off load.
- G. Any tested anchor which does not meet the above criteria shall be replaced or supplemented as approved by the Engineer. Following construction, the anchors shall be post-tensioned and locked-off at 100 percent of the design load indicated.
- H. Additional performance testing shall be performed as directed by the Engineer when any changes are made in the anchor assembly or installation procedures.

- END OF SECTION -

SECTION 02370

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

PART 1 – GENERAL

1.01 GENERAL

- A. The Contract Documents include a Storm Water Pollution Prevention Plan (SWPPP) that has been approved by LFUCG and the Engineer. This SWPPP as well as the erosion and sediment control (ESC) details within the Contract Documents shall be used for establishing quantities and a lump sum (LS) price for providing the Erosion and Sediment Control Measures throughout the project area.
- B. The Contractor may use this SWPPP to obtain any required permits. If Contractors chooses to use this SWPPP, the Contractor take sole responsibility for the contents of the SWPPP and the implementation of the SWPPP during construction.
- C. The Contractor may also choose to prepare its own SWPPP and submit to the LFUCG-DWQ for approval. The SWPPP and ECS plan shall incorporate all requirements of the included permits to the project.
- D. No additional payment will be allowed for the Erosion and Sediment Control and conformance with SWPPP pay item.

PART 2 – PRODUCTS

2.01 GENERAL

- A. See the included SWPPP in Specification Section 02371.

END OF SECTION

SECTION 02371

CONSTRUCTION SITE STORMWATER POLLUTION PREVENTION PLAN

This Stormwater Pollution Prevention Plan (SWPPP) narrative and the attached plan sheets address requirements of the Kentucky Division of Water's Best Management Practices (BMP) Plan and the LFUCG's Erosion and Sediment Control (ESC) Plan.

**Plan Preparer:** Kurt A. Zehnder, P.E. 859.286.1265, [KZehnder@hazenandsawyer.com](mailto:KZehnder@hazenandsawyer.com)

**Date:** September 2018                      **KY DOW NOI Attached\*** Yes \_\_\_ No \_\_\_  
\*KY NOI-SWCA Permitting instructions can be found Drawing G04.

**1. CONTACT INFORMATION AND SITE DESCRIPTION**

**Project Name and Location**

West Hickman WWTP Final Clarifiers No. 7 & No. 8 Structural Repairs  
LFUCG-DWQ, Lexington, KY 40511

**Site Owner Name and Contact Information**

Ms. Tiffany Rank, PE  
LFUCG-DWQ  
301 Jimmy Campbell Drive  
Lexington, KY 40504

**Construction Site SWPPP/BMP Plan Manager and Contact Information**

General Contractor: \_\_\_\_\_

Name of Contractor: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

**Project Start and End Dates**

Start: November 2018  
End: October 2019

**Description – Existing Site Conditions, Purpose, and Types of Soil Disturbing Activities**

The existing site is the West Hickman Wastewater Treatment Plant (WWTP) site, and within the plant, this project is primarily within Final Clarifiers No. 7 & 8 and the clarifier splitter boxes associated with clarifiers 1-4 and 5-8. This project will include the removal/replacement and repair of the final clarifier mechanisms within Final Clarifiers No. 7 & 8, structural repairs to the base slabs of both final clarifiers No. 7 & No. 8 and gate replacements with the two splitter boxes. The soil disturbance associated with this project is at a minimum. This described work together will all related work as specified and shown on the Contract Documents.

**Runoff Coefficient**

Current Runoff Coefficient = 0.38; Final Runoff Coefficient = 0.38

**Site Area and Disturbed Acreage**

This entire project is within existing concrete structures and the only soil disturbance includes the Contractor's construction equipment, staging, etc. The total land disturbance is site-specific with total disturbances of under 0.50 acre. The entire site will be disturbed at one time and project falls under the 1 acre of disturbance limit for the state ESC permitting.

Erosion and Sedimentation Controls are specified in Spec Section 02372 and details included in the Construction Drawings.

**Sequence of Major Activities**

<b>Construction Activity</b>	<b>Schedule Considerations</b>
Work crew orientation	Pre-project briefing to review permits, plans, schedule, and staffing.
Construction access – install entrance to site, initial construction routes, initial areas designated for vehicle parking	This is the first land-disturbing activity. Minimal clearing/grading will be done to install stabilized #2 rock site exit with geotextile underliner, at least 50 ft long. Downgradient silt fences will be installed below areas to be cleared, grubbed, graded, or cut/filled. Do-not-disturb areas will be marked off.
Sediment traps and barriers – basins, traps, sediment fences, outlet protection	ID locations and install temporary sediment traps as needed to intercept flow. Build basins prior to upgradient work where possible, and seed/mulch/blanket slopes immediately. Relocate and reinstall silt fences as necessary prior to upgradient work. Maintain and remove sediment as necessary.
Runoff and run-on controls – diversion ditches or berms, perimeter dikes	Install controls as needed to divert clean flows around or through site. Key practices will be installed after the installation of principal sediment traps and before land grading. Additional runoff control measures may be installed during grading.
Bore pits excavated; open cut trench excavation for utility line installation	Top soil is preserved for final backfilling. Trees and buffer areas around streams, sinkholes, and other protected areas will be marked for preservation.
Runoff conveyance system - storm drains, channels, inlet and outlet protection, slope drains	Inlet and outlet protection measures will be installed as needed. Drainage ditches will be stabilized immediately with sod or seed with erosion control blanket. Slope drains will be installed as indicated on site drawings. A minimum 25 ft vegetated buffer will be maintained around all streams and sinkholes.
Surface stabilization—temporary and permanent seeding, mulching, sodding, riprap	All disturbed areas will be graded and stabilized as soon as possible. Stabilization will begin within 14 days on areas of the site where construction has permanently or temporarily ceased. Temporary and permanent stabilization will comply with the Stormwater Manual. Erosion control blankets and turf reinforcement mats will be used on slopes in accordance with the Stormwater Manual.
Construction of utilities & paving	During construction, erosion and sedimentation control measures will be installed as needed, such as construction entrances and downgradient silt fences and sediment traps. Areas at final grade not in the immediate construction area will be seeded/mulched as soon as possible.
Landscaping and final stabilization—topsoiling,	This is the last construction phase. All remaining disturbed areas will be stabilized, including borrow and spoil areas. Temporary control



trees and shrubs, permanent seeding, mulching, sodding.	structures will be removed and the area will be seeded and mulched.
---	---

**2. SITE DESCRIPTION, MAPS, AND DRAWINGS (INCLUDED BELOW OR ATTACHED)**

The Contractor has a set of construction plans "marked up", showing his proposed erosion control features and the placement of them throughout the project.

**Site Plan Showing Pre/Post Construction Topography, Construction, Drainage Features, and all BMPs**

**Name of Receiving Waters**

The whole project site will drain into the West Hickman Creek, which flows into the Hickman Creek and then the Kentucky River. It is the Contractor's responsibility for all erosion control and drainage features on the project.

**Potential Sources of Pollutants**

Sediment from land clearing and grading; fertilizer; oil/fuel/grease from equipment; trash/debris.

**3. EROSION PREVENTION AND SEDIMENT CONTROL MEASURES**

**Limits of Disturbance and Project Phasing**

Without exception, no more than 25 acres will be disturbed at any one time. If 25 acres of disturbed area exist on the site, no new disturbed areas will be created until previously disturbed areas are temporarily or permanently stabilized on an acre-for-acre basis. Land disturbance activities will be phased to minimize the amount of soil exposed and the length of exposure time. The overall objective will be to achieve final grades as quickly as possible, and to stabilize all areas with seed, mulch or blankets/mats within 14 days after final grade is achieved, or after grading work is suspended on that portion of the site.

**Stabilization Practices**

*Temporary Stabilization* – Top soil stockpiles and disturbed portions of the site where construction activity stops for 14 days or more will be stabilized with temporary seed or straw mulch no later than 14 days from the last construction activity in that area (portion) of the site. Seeding rates will be consistent with the Kentucky Erosion Prevention and Sediment Control Field Guide Lime and fertilizer will be applied only when necessary. After seeding, each area shall be mulched with at least 3,000 pounds per acre of blown or hand-scattered straw. The straw will be netted down or crimped into place by a disk harrow with the blades set straight. Slopes will be covered with blankets or mats consistent with the KY Stormwater Manual. Areas of the site which are to be paved will be temporarily stabilized by applying geotextile and stone sub-base until bituminous pavement can be applied. Dust will be controlled by water sprayed from a tanker truck as needed during dry weather.

*Permanent Stabilization* – Disturbed portions of the site where construction activities are completed will be stabilized with permanent seed no later than 14 days after completion of grading in that area. Seed and mulch will be applied consistent with the Kentucky Erosion Protection and Sediment Control Field Guide. Lime and fertilizer will be applied only if needed. After seeding, each area will be mulched with 4,000 pounds per acre of straw. The straw mulch will be netted down or crimped into place by a disk harrow with blades set straight. Slopes will be covered with erosion control blankets or turf reinforcement mats consistent with the KY

Stormwater Manual. Ditches will be triple-seeded and lined with erosion control blanket or turf reinforcement matting.

### **Structural Practices**

*Earthen Berm* – will be constructed along the uphill perimeter (north) of the site. This berm will divert clean run-on water around the construction site. Another berm on the east side will collect runoff from the disturbed area and direct the runoff to the sediment basin. Berms will be seeded and mulched immediately after construction. Erosion control blankets will be used on top of seed in berm ditches with slopes of 5-10 percent. Turf reinforcement mats will be used in berm ditches with slopes exceeding 10 percent. Blankets or mats will be used on slopes in accordance with the KY Stormwater Manual.

*Sediment Traps* – will be sited and constructed as needed, according to the attached drawings and through field adaptations to changing grades and emergence of gullies that need to be controlled. Traps will consist of rock or rock bag berms across concentrated flow areas and be designed to intercept, detain, and settle out these flows. Traps installed as field adaptations will be logged on the erosion control plan sheets.

*Sediment Basin* – will be constructed at the common drainage location on the south side of the construction site. The basin will be formed by constructing an embankment across an existing gully and excavating a storage pond with a volume of 134 cubic yards for each upgradient disturbed acre. The basin will drain through a perforated corrugated metal riser and outlet pipe to a riprap outlet apron. The riser will have ½ inch holes 3-6 inches apart, with no large holes or slots in the lower two-thirds of the riser. Sediment will be removed before the basin is half full. Also, once construction activities are nearly complete, the accumulated sediment will be removed from the basin. The sediment basin and surrounding area will be seeded and mulched immediately after construction. Blankets or mats will be used on slopes in accordance with the Stormwater Manual. Basin outlet will be protected with a rock berm during construction, to pond up and detain incoming flow.

*Inlet Protection Measures* – will be used to detain, pond, and settle (or filter) out sheet and concentrated flows moving toward curb, drop, or other inlets. Inlet protection structures will consist of rock bags, #2 rock berms, trenched in silt fence on framing, or commercial devices.

*Outlet Protection Measures* – will be used where culverts discharge to ditches or channels, and consist of turf reinforcement matting over triple seeding, erosion control blanket over triple seeding, or channel lining, depending on the scour flows and consistent with the Kentucky Division of Water's BMP Technical Specifications Manual.

*Ditch Check Dams* – will be installed as needed to control ditch downcutting, trap sediment, and stabilize ditches. Check dam installation will be consistent with the Kentucky Erosion Protection and Sediment Control Field Guide and BMP Technical Specifications Manual.

### **Site Runoff Management**

Sediment will be prevented from leaving the site to the maximum extent practicable. Storm water drainage will be provided mostly by grassed swales, with sheet runoff from parking lots and building drains leading to a permanent stormwater pond on the south side of the site. The pond will be modified for sediment retention during the construction phase. Runoff will be diverted onto undisturbed vegetated areas and revegetated areas where possible for infiltration. Landscaped areas with no buildings or roads will be brought to grade and planted/seeded/mulched within 14 days. Two acres of the site, along existing drainage areas and some slopes, will be flagged off-limits to equipment and remain in its current natural state.

When construction is complete the entire site will drain to the south side detention basin (the detention basin will be in the location of the temporary sediment basin). The areas on the sides of the basin will be seeded and mulched after construction. The detention pond is designed with a permanent pool volume of 1,333 cubic yards. This is equivalent to one inch of runoff for the drainage area. It is expected that this detention pond design will remove 80 percent removal of total suspended solids in the site runoff. The pond has been designed by a professional engineer to keep peak flow rates from the two and ten year 24-hour storms at pre-development rates. The outlet of the detention basin will be stabilized by a riprap apron. The inlet will be modified during construction by installation of a 3 ft high rock berm around the inlet to increase detention time and sediment removal. The berm will be removed after the entire site is stabilized.

#### **4. OTHER CONTROL MEASURES**

##### **Offsite Vehicle Tracking**

A stabilized #2 and larger rock construction exit with geotextile underliner will be installed to help reduce vehicle tracking of sediments at all exits onto paved roads. The stabilized exit will be 100 ft where possible, and at least 50 ft in length. The paved street adjacent to the site entrance will be swept/cleaned daily if necessary to remove any excess mud, dirt, or rock tracked from the site. The rock exit will be grubbed lightly or otherwise maintained as needed to clear (shake down) dry mud. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

##### **Waste Disposal**

*Waste Materials* – All waste materials that may leach pollutants (paint and paint containers, caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) will be collected and stored in a covered metal dumpster rented from a company who is a licensed solid waste management company. The dumpster will meet all state solid waste management regulations. Construction debris and other wastes that do not leach pollutants will be deposited in a covered or open-topped dumpster. The dumpster will be emptied when full, and the contents will be hauled to a licensed landfill. No construction waste materials will be buried onsite. All personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer and the Contractor who manages the day-to-day site operations, will be responsible for seeing that these procedures are followed.

*Hazardous Waste* – All waste materials will be disposed of in the manner specified by local or state regulation or by the manufacturer. Site personnel will be instructed in these practices and the Contractor, the individual who manages day-to-day site operations, will be responsible for seeing that these practices are followed

*Sanitary Waste* – Portable toilets will be used on site for sanitary wastes. All sanitary waste will be collected from the portable units as needed to prevent excessive odors and overflows by a licensed sanitary waste management contractor, as required by local regulation. Portable units will be placed away from storm drain inlets, ditches, creeks, and other water bodies

##### **Timing of Control Measures**

As indicated in the Sequence of Major Activities, the stabilized construction exit, earthen diversion berm, silt fences / sediment barriers, and sediment basin will be constructed prior to clearing or grading of any other portions of the site. Sediment traps will be constructed as needed in areas where gullying occurs. Ditches will be built and triple seeded/mulched (or blanketed) after construction. Areas where construction activity temporarily ceases for more than 14 days will be stabilized with temporary seed and/or mulch within 14 days of the last

disturbance. Once construction activity ceases permanently in an area, that area will be seeded and mulched within 14 days. Temporary controls in permanently stabilized areas, such as silt fences, sediment barriers, ditch checks, temporary sediment traps, etc., will be removed. Controls will remain in place until all vegetation is established and ditches are stable.

## 5. OTHER STATE AND LOCAL PLANS

### **Certification of Compliance with Federal, State, and Local Regulations**

This Stormwater Pollution Prevention Plan (BMP Plan) reflects Kentucky Division of Water requirements for stormwater management and erosion and sediment control. To ensure compliance, this plan was prepared in accordance with the Kentucky BMP Planning and Technical Specifications Manual published by KY DOW and KY DOC. There is an approved KY DOW Floodplain Permit and KY DOW Section 401 Water Quality Certification Permit which copies were given to the Contractor at the Pre-Construction meeting and their responsibility to maintain on the project site.

## 6. MAINTENANCE PROCEDURES

### **Stormwater, Erosion, and Sediment Control Maintenance Practices**

Maintenance of all BMPs at the site will be handled by the Contractor. Other workers on-site will be trained in BMP installation, maintenance, and good housekeeping by the Contractor. These are the inspection and maintenance practices that will be used to maintain erosion and sediment controls:

- Less than ½ of the site or 5 acres, whichever is less, will be cleared of vegetation at one time; areas at final grade will be seeded and mulched within 14 days.
- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported. This information will be logged on the SWPPP/BMP Plan
- Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts. Bypasses will be repaired immediately.
- Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- The sediment basin will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 30 percent of the design capacity and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.

## 7. INSPECTION PROCEDURES

### **Stormwater, Erosion, and Sediment Control Inspection Practices**

Inspection of all BMPs at the site will be handled by the Contractor.

- All erosion prevention and sediment control measures will be inspected at least once each week and following any rain of one-half inch or more.
- Inspections will be conducted by the Contractor, who has been trained by the KY DOW and KEPSC. The Contractor will train three people who will be responsible for assisting in the inspections and installing, maintaining, and repairing the controls on the site.
- Inspection reports will be written, signed, dated, and kept on file for two years.

## 8. NON-STORMWATER DISCHARGES

It is expected that the following non-storm water discharges will occur from the site during the construction period:

- Water from force main flushings and pressure testing the force main.
- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
- Uncontaminated groundwater and rain water (from dewatering during excavation).

All non-storm water discharges will be directed to a sediment basin, filter bag, or filter fence enclosure in a flat vegetated infiltration area prior to discharge, to remove sediment and other contaminants.

**The materials or substances listed below are expected to be present onsite during construction:**

- Concrete
- Detergents
- Paints (epoxy, enamel and latex)
- Fertilizers
- Petroleum Based Products
- Cleaning Solvents
- Wood
- PVC
- HDPE
- Ductile Iron
- Steel
- Aluminum

### **Spill Prevention and Material Management Practices**

The following material management practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to exposure to the weather and/or runoff.

### **Good Housekeeping**

The following good housekeeping practices will be followed onsite during the construction project.

- An effort will be made to store only enough product required to do the job
- Products and materials will be stored away from the surface drainage system.
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in their original containers with the original manufacturer's label
- Substances will not be mixed with one another unless recommended by the manufacturer
- Whenever possible, all of the product will be used up before disposing of the container
- Manufacturers' recommendations for proper use and disposal will be followed
- The site superintendent will inspect daily to ensure proper used and disposal of materials onsite.
- Dust will be controlled by water sprayed from a tanker truck as needed during dry weather.

### **Hazardous Products**

These practices will be used to reduce the risks associated with any and all hazardous materials.

- Products will be kept in original containers unless they are not resealable.
- Original labels and material safety data sheets (MSDS) will be reviewed and retained.
- If surplus product must be disposed of, manufacturers' or state/local recommended methods for proper disposal will be followed.

### **Petroleum Products**

All onsite vehicles will be fueled and maintained off-site, monitored for leaks, and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products stored onsite (oil, gas for tump and pump) will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

### **Fertilizers**

If used, fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be covered with mulch or blankets or worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

### **Paints**

All containers will be tightly sealed and stored indoors or under roof when not being used. Excess paint or paint wash water will not be discharged to the drainage or storm sewer system but will be properly disposed of according to manufacturers' instructions or state and local regulations.

### **Concrete Truck Washout**

Concrete truck mixers and chutes will not be washed on pavement, near storm drain inlets, or within 75 feet of any ditch, stream, wetland, lake, or sinkhole. Where possible, excess concrete and wash water will be discharged to areas prepared for pouring new concrete, flat areas to be paved that are away from ditches or drainage system features, or other locations that will not drain off site. Where this approach is not possible, a constructed wash basin lined with plastic sheeting will be installed away from ditches to receive the wash water. Washout locations are indicated on the attached drawings.

### **Spill Control Practices**

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include but not limited to brooms, dust pans, mops, rags, gloves, kitty litter, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.

- Spills of toxic or hazardous material will be reported to the appropriate state/local agency.
- The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- The site superintendent responsible for the day-to-day site operations, will be the spill prevention and cleanup coordinator. He will designate at least three other people onsite to receive spill prevention/cleanup training and assist in cleanups. Their names will be posted in the material storage area and in the office trailer outside.

**9. CONTRACTOR AND SUBCONTRACTOR CERTIFICATIONS**

**SWPPP Files, Updates, and Amendments**

This SWPP Plan and related documents (e.g., NOI, inspection reports, US ACE permits, etc.) will be kept on file at the construction site by the Contractor. The SWPPP will be updated by the Owner and/or Site Manager to reflect any and all significant changes in site conditions, selection of BMPs, the presence of any unlisted potential pollutants on site, or changes in the Site Manager, contractor, subcontractors, or other key information. Updates and amendments will be made in writing within 7 days and will be appended to the original BMP Plan and available for review.

**Stormwater Pollution Prevention Plan Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

I certify under penalty of law that I understand the terms and conditions of the general KPDES permit that authorizes the storm water discharges associated with the construction site activity identified as part of this certification.

**Subcontractor Certification**

The subcontractors below certify under penalty of law that they understand the terms and conditions of the general KPDES permit that authorizes the storm water discharges associated with the construction site activity identified as part of this certification.

Signed: \_\_\_\_\_

Print: Name: \_\_\_\_\_

Name of Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

### Construction Site Inspection Report

Company:	Site:	County:
Site Operator:		Inspection Date:
Receiving Water:	Total Site Area (acres):	# Disturbed Acres:
Inspector Name:	Inspector Qualifications:	
Inspection Type: Weekly or ½ Inch Rain	Days Since Last Rainfall ____	# Inches of Last Rainfall:

#### Field Inspection Observations

BMP Category	Compliance			Field Indicators for Compliance
	Poor	Fair	Good	
Project Operations				Notice of Intent (KPDES permit) and other local/state permits on file BMP Plan on site and available for review; project activities following BMP plan Weekly inspection and rain-event reports on BMPs available for review Diversions, silt checks/traps/basins, and silt fences/barriers installed prior to clearing Grading and clearing conducted in phases to minimize exposed soil areas No vegetation removal or operations in stream or sinkhole buffer area (25 ft min) Rock pad with underliner in place on all construction site exits leading to paved roads No sediment, mud, or rock on paved public roads in project area Dust control if needed when working in residential areas during dry conditions
Drainage Management				Upland runoff diverted around bare soil areas with vegetated/lined ditches/berms Drainage channels exiting the site are lined with grass/blanket/rock and stabilized Discharges from dewatering operations cleaned in silt fence enclosure or other filter No muddy runoff leaving site after rains up to 1½ inches
Erosion Protection				Exposed soil seeded/mulched after 2 weeks if no work is planned for the next 7 days Soils on steep slopes seeded/mulched/blanketed as needed to prevent rutting
Sediment Barriers				Silt fence, rock filter, or other sediment barrier below all bare soil areas on slopes Barrier installed across slope on the contour, trenched in, posts on downhill side Multiple sediment barriers at least 125 ft apart on unseeded slopes steeper than 4:1 J-hook interceptors along silt fence where heavy muddy flows run along fencing No visible undercutting or bypassing or blowout of sediment barrier Accumulated sediment is less than halfway to the top of sediment barrier



Slope Protection	Slopes tracked, disked, or conditioned after final grade is established Slopes seeded, mulched, or blanketed within 14 days, no unmanaged rills or gullyng Heavy downslope flows controlled by lined downdrain channels or slope drain pipes No muddy runoff from slopes into streams, rivers, lakes, or wetlands
Inlet Protection	Inlet dam/device or filtration unit placed at all inlets receiving muddy flows No visible undercutting, bypassing, or blowout of inlet protection dam or device Accumulated sediment is less than halfway to the top of the inlet protection dam/device
Outlet Protection	High flow discharges have rock or other flow dissipaters of adequate sizing at outlet Culvert outlets show no visible signs of erosion/scour, bank failure, or collapse
Ditch and Channel Stabilization	No unmanaged channel bank erosion or bottom scouring visible within or below site Ditches with slopes more than 3% have check dams spaced as needed, if not grassed Ditch check dams tied in to banks, with center 4" lower than sides, and no bypassing Ditches with slopes of up to 5% are thickly seeded with grass (minimum requirement) Ditches 5% to 15% are lined with thick grass and erosion control blankets as needed Ditches 15% to 33% are lined with thick grass and matting or other approved product Ditches exceeding 33% are paved or lined with rock or other approved product
Sediment Traps and Basins	Storage volume is at least 134 cubic yards for each acre of bare soil area drained Trap or basin is seeded/mulched and stabilized; no collapsing sidewalls or banks Outlet structure is stable and consists of rock-lined notched overflow or outlet riser Rock overflow is 6" lower in center to control overflow discharge Outlet riser pipe has concrete & rock base, ½ inch holes every 3" to 6", and trash rack Area near pipe outlet or overflow is stable, with no scour or erosion Sediment removed before trap or basin is halfway full; disposal is away from ditches
Maintenance of EPSC Management Practices	Sediment behind silt fence and other filters does not reach halfway to top Sediment traps and basins are less than half full of sediment Gullies repaired, silt fences and other controls inspected and repaired/replaced Written documentation of controls installed, inspection results, and repairs performed

	All controls removed and areas graded, seeded, and stabilized before leaving site
Materials Storage, Handling, and Cleanup	Materials that may leach pollutants stored under cover and out of the weather Fuel tanks located in protected area with double containment system Fuel and/or other spills cleaned up promptly; no evidence of unmanaged spills No evidence of paint, concrete, or other material washouts near drain inlets No storage of hazardous or toxic materials near ditches or water bodies
Waste Disposal	Trash, litter, and other debris in proper containers or properly managed No litter or trash scattered around on the construction site Provisions made for restroom facilities and/or other sanitary waste management Sanitary waste facilities clean and serviced according to schedule No disposal of any wastes into curb or other inlets, ditches, streams, or water bodies

**Inspection Notes and Key Observations**

<b>List of Stabilized Areas: (i.e. Vegetation is Established; Ditches are Stabilized; No Exposed Soil)</b>
<b>Other Notes or Observations:</b>
<b>Corrective Actions Taken and/or Proposed Revisions to BMP Plan:</b>

*I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.*

**Signature of Inspector:** \_\_\_\_\_ **Date:** \_\_\_\_\_

END OF SECTION

## SECTION 02372

### EROSION AND SEDIMENT CONTROL

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, and equipment required for installing, maintaining, amending, and removing temporary soil erosion, sediment, and pollutant controls as shown in the Stormwater Pollution Prevention Plan (SWPPP) and as specified herein and as required by the LFUCG Land Disturbance Permit, Chapter 16-Article X, Division 5 of the LFUCG Code of Ordinances, and the KPDES General Permit for Stormwater Discharges Associated with Construction Activities (KYR10).
- B. The Contractor shall take all site management measures necessary to minimize erosion and contain sediment, construction materials (including excavation and backfill), and pollutants (such as chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful waste) and prevent them from being discharged into or alongside any body of water or into natural or man-made channels leading thereto.
- C. The Contractor shall at all times minimize disturbance and the period of time that the disturbed area is exposed without stabilization practices. In "critical areas" (within 25 feet of a stream) erosion prevention measures such as erosion control mats/blankets, mulch, or straw blown in and stabilized with tackifiers or by treading, etc. shall be implemented on disturbed areas within 24 hours or "as soon as practical" after completion of disturbance/grading or following cessation of activities.
- D. Temporary erosion controls include, but are not limited to grassing, mulching, seeding, providing erosion control and turf reinforcement mats on all disturbed surfaces including waste area surfaces and stockpile and borrow area surfaces; scheduling work to minimize erosion and providing interceptor ditches at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits.
- E. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, and appurtenances on sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits.
- F. Contractor is responsible for providing and maintaining effective temporary erosion and sediment control measures prior to and during construction or until final controls become effective.
- G. Prior to construction, the Contractor shall obtain a LFUCG Land Disturbance Permit and shall obtain coverage under the KPDES General Permit for Stormwater Discharges Associated with Construction Activities (KYR10) (see Article 3.24 in this Section). The Contractor shall be responsible for placement of pollutant, erosion, and sedimentation controls as shown in the Stormwater Pollution Prevention Plan (SWPPP) prior to excavation, fill or grade work. If during the course of construction, the state and/or LFUCG determine additional controls are required, the Contractor shall furnish, install and maintain additional mulch, blankets, sediment barriers, and/or other controls as

necessary to control pollution, erosion, and sedimentation to the satisfaction of the regulatory agency.

- H. The Contractor shall inspect and repair all erosion and sedimentation controls as follows:
  - 1. At least once every seven (7) calendar days, and
  - 2. Within 24 hours after any storm event of 0.5 inch or greater.
- I. Final stabilization practices on those portions of the project where construction activities have permanently ceased shall be initiated within fourteen (14) days of the date of cessation of construction activities. Temporary stabilization practices on those portions of the project where construction activities have temporarily ceased shall be initiated within fourteen (14) days of the date of cessation of construction activities.
- J. Erosion and Sediment Control prevention measures shall be installed prior to removal of vegetation and/or stripping of topsoil. The Contractor is responsible for preparing and submitting the state Notice of Intent and attachments and obtaining state permit approval prior to the beginning of any construction activities.

#### 1.02 PERMITS AND NOTIFICATION REQUIREMENTS

- A. The Contractor is responsible to prepare a Stormwater Pollution Prevention Plan (SWPPP) for inclusion with permit submittals. The Contractor may elect one of the following options to meet this requirement:
  - 1. Utilize the SWPPP (which includes the Erosion and Sediment Control Plan) provided in the Construction Drawings and prepared by the Owner's Engineer and take sole responsibility for implementing the SWPPP, or
  - 2. Provide a SWPPP, including an Erosion and Sediment Control Plan, prepared by a professional engineer licensed in the Commonwealth of Kentucky, meeting all of the requirements of KYR10 and Chapter 16-Article X, Division 5 of the LFUCG Code of Ordinances.
- B. The Contractor shall submit a Notice of Intent specifically for Construction Activities (NOI-SWCA) before beginning any site disturbance, and shall implement erosion, sediment and pollution control measures as may be required by state, local and federal agencies. Contractor shall submit a signed Notice of Intent form and required attachments to the Division of Water at least seven (7) days prior to beginning of construction activity. See Article 3.24 in this Section for detailed requirements.
- C. A Land Disturbance Permit shall be obtained from the Lexington-Fayette Urban County Government. See Article 3.25 in this Section for detailed requirements.
- D. The Contractor shall comply with all additional requirements of LFUCG. It is the Contractor's responsibility to provide evidence to the Owner that all permits have been obtained prior to initiation of construction.

#### 1.03 RELATED WORK

- A. Section 02371 – Storm Water Pollution Prevention Plan (SWPPP)

- B. Section 02373 – Stream Crossings, Streambank Restoration, and Stream Buffer Restoration
- C. Applicable LFUCG Storm Water Manual Standard Drawings are included at the end of this Section 02372.

## PART 2 – PRODUCTS

### 2.01 MULCH

- A. Mulch shall be used as a soil stabilization measure for any disturbed area inactive for 14 days or longer. Areas requiring stabilization during December through February shall receive only mulch held in place with bituminous material. Mulching shall be used whenever permanent or temporary seeding is used. The anchoring of mulch shall be in accordance with the Construction Drawings except all mulch placed in December through February shall be anchored with bituminous materials regardless of the slope. Permanent mulches shall be used in conjunction with planting trees, shrubs, and other ground covers that do not provide adequate soil stabilization.
- B. Straw shall come from wheat, rye, or barley and may be spread by hand or machine. Straw shall be anchored. Straw shall be applied at two tons per acre or 90 pounds per 1,000 square feet. Straw shall be free from weeds and coarse matter.
- C. Wood chips do not require tacking. Wood chips shall be applied at 270 cubic yards per acre or 6 cubic yard per 1,000 square feet and approximately 2 inches deep. Wood chips shall be treated with 20 pounds of nitrogen per acre or shall be treated with 12 pounds slow-release nitrogen per ton to prevent nutrient deficiency in plants.
- D. Bark chips or shredded bark shall be applied at 70 cubic yards per acre or 1.5 to 2 cubic yards per 1,000 square feet and about one-half inch thick. Bark does not require additional nitrogen fertilizer.
- E. Manufacturer's recommendations shall be followed during application of manufactured wood fiber and recycled paper sold as mulch materials applied in a hydroseeder slurry with binders/tackifiers. Recycled paper (newsprint) or wood fiber shall be mixed at 50 pounds per 100 gallons of water and applied according to manufacturer's recommendations and model of hydroseeder in use.
- F. Liquid mulch binders/tackifiers shall be applied according to manufacturer's recommendations. Chemical soil stabilizers or soil binders/tackifiers/emulsions shall not be used alone.
- G. Netting and mats shall be used in critical areas such as waterways where concentrated flows are expected.
- H. Before the gravel or crushed stone is applied, it shall be washed. Aggregate cover shall only be used in relatively small areas and shall be incorporated into an overall landscaping plan.

2.02 TEMPORARY SEED

- A. Temporary seeding shall be used for soil stabilization when grades are not ready for permanent seeding, except during December through February. The seed shall be applied within 14 days after grading has stopped. Only rye grain or annual rye grass seed shall be used for temporary seeding.

2.03 PERMANENT SEED

- A. Permanent seeding shall be applied within 14 days after final grade has been reached, except during December through February. Permanent seeding shall also be applied on any areas that will not be disturbed again for a year even if final grades have not been reached. The use of mulch and erosion matting and netting with permanent seeding shall be in accordance with applicable sections of this Specification. "Seed mats" may be used for permanent seeding in accordance with manufacturers' recommendations.
- B. Permanent seeding shall be used on disturbed areas where permanent, long-lived vegetative cover is needed to stabilize the soil and on rough graded areas that will not be brought to final grade for one year or more.
- C. The area to be seeded shall be protected from excess runoff as necessary with diversions, grassed waterways, terraces, or sediment ponds.
- D. Contractor shall use the following Permanent Seed Mix, with the following exceptions:
  - 1. If a property owner landscaping agreement differs from this specification, the property owner landscaping agreement shall be followed on that property, or
  - 2. he area to be seeded is within 25 feet of a stream bank, in which case Contractor shall follow the seed mix provided in Section 02373, or
  - 3. The Construction Drawings identify a different seed mix.

The Permanent Seed Mix shall consist of the following mix spread at a rate of 12.5 pounds/1,000 square feet:

Common Name	%	lbs per 1,000 sq. ft.
Bluegrass	24%	3
Perennial ryegrass (turf)	16%	2
+ bluegrass	20%	2.5
Tall fescue (turf type)	32%	4
+ bluegrass	8%	1
TOTAL	100%	12.5

- 4. Vegetative cover alone shall not be used to provide erosion control cover and prevent soil slippage on a soil that is not stable due to its structure, water movement, or excessive slope.
- 5. Permanent seeding may be done at any time except December through February.

6. Soil material shall be capable of supporting permanent vegetation and have at least 25 percent silt and clay to provide an adequate amount of moisture holding capacity. An excessive amount of sand will not consistently provide sufficient moisture for good growth regardless of other soil factors.
7. Fertilizer shall be applied at a rate of 800 pounds per acre of 10-10-10 analysis or equivalent, unless soil test results indicate a different rate is appropriate. Lime shall be applied at a rate of 100 pounds per 1,000 square feet or two tons per acre of agricultural ground limestone, unless soil test results indicate differently.

#### 2.04 SOD

- A. Sod shall be used for disturbed areas that require immediate vegetative cover, *e.g.*, the area surrounding a drop inlet in a grassed waterway, the design flow perimeter of a grassed waterway that will convey flow before vegetation can be established, and the inlet of a culvert. Sod may be installed throughout the year. "Seed mats" and seed with geotextiles may be used in place of sod when done in accordance with manufacturers' recommendations.
- B. Contractor shall use tall fescue sod, unless another species is specified in the Construction Drawings or unless the property owner landscaping agreement differs from this specification.
- C. Sod shall not be used to provide erosion control and prevent soil slippage on a soil that is not stable due to its structure, water movement, or excessive slope.
- D. Sod shall be installed within 36 hours of digging and removal from the field. Sod should not be used on slopes steeper than 2H:1V. If it is to be mowed, installation should be on slopes no greater than 3H:1V.
- E. Soil material shall be capable of supporting permanent vegetation and shall consist of at least 25 percent silt and clay to provide an adequate amount of moisture holding capacity. An excessive amount of sand will not consistently provide sufficient moisture for the sod regardless of other soil factors.
- F. Fertilizer shall be applied at a rate of 1,000 pounds per acre of 10-10-10 analysis or equivalent, unless soil test results indicate a different rate is appropriate. Lime shall be applied at a rate of 100 pounds per 1,000 square feet or two tons per acre of agricultural ground limestone, unless soil test results indicate differently.
- G. The sod shall consist of strips of live, vigorously growing grasses. The sod shall be free of noxious and secondary noxious weeds and shall be obtained from good, solid, thick-growing stands. The sod shall be cut and transferred to the job in the largest continuous pieces that will hold together and are practical to handle.
- H. The sod shall be cut with smooth clean edges and square ends to facilitate laying and fitting. The sod shall be cut to a uniform thickness of not less than three-fourth inch measured from the crown of the plants to the bottom of the sod strips for all grasses except bluegrass. Bluegrass sod shall be cut to a uniform thickness of not less than one and one-half inches.
- I. The sod shall be mowed to a height of not less than two inches and no more than four inches prior to cutting.

- J. The sod shall be kept moist and covered during hauling and preparation for placement on the sod bed.

## 2.05 ROAD/PARKING STABILIZATION

- A. Gravel or paved material shall be used to stabilize permanent roads or parking areas or roads or parking areas used repeatedly by construction traffic. Stabilization shall be accomplished within 14 days of grading or initiation of use for construction traffic. Unstabilized roads are not acceptable except in instances where the road will be used less than one month.
- B. Road/parking stabilization shall be used wherever roads or parking areas are constructed, whether permanent or temporary, for use by construction traffic.
- C. Stabilization shall be accomplished with a minimum depth of six inches of crushed stone. Stabilized construction roadbeds shall be at least 14 feet wide for one-way traffic and at least 20 feet wide for two-way traffic.
- D. Temporary roads shall follow the contour of the natural terrain to the extent possible. Slopes shall not exceed 10 percent.
- E. Temporary parking areas shall be located on naturally flat areas to minimize grading. Grades shall be sufficient to provide drainage but shall not exceed 4 percent.
- F. All cuts and fills shall be 2H:1V or flatter.
- G. Drainage ditches shall be provided as needed.
- H. Crushed stone shall be KYTC aggregate No. 2 (1.5 to 3 inches in diameter), or equivalent.

## 2.06 CONSTRUCTION ENTRANCE

- A. A stabilized construction entrance shall be constructed wherever vehicles are leaving a construction site to enter a public road or at any unpaved entrance/exit location where there is a risk of transporting mud or sediment onto paved roads. A construction entrance shall be constructed at the beginning of the project before construction traffic begins to enter and exit the site.
- B. A stabilized construction entrance shall be constructed of crushed stone a minimum of 6 inches thick laid over geotextile (filter fabric).
- C. The width shall be at least 20 feet and as wide as the entire width of the access. At sites where traffic volume is high, the entrance shall be wide enough for two vehicles to pass safely. The length shall be at least 50 feet, and where practical, shall be extended to 100 feet. The entrance shall be flared where it meets the existing road to provide a turning radius.
- D. Stormwater and wash water runoff from a stabilized construction entrance shall drain to a sediment trap or sediment pond. If conditions on the site are such that the majority of the mud is not removed by the vehicles traveling over the gravel, then the tires of the vehicles shall be washed before entering a public road.



- E. Pipe placed under the entrance to handle runoff shall be protected with a mountable berm.
- F. Dust control shall be provided in accordance with the applicable sections of this Specification.
- G. Crushed stone shall be KYTC aggregate No. 2 (1.5 to 3 inches in diameter), or equivalent.
- H. Geotextile filter fabric shall be KYTC Type III.

## 2.07 DUST CONTROL

- A. Dust control measures shall be implemented on the site.
- B. Construction activities shall be phased to minimize the total area unstabilized at any given time, thereby reducing erosion due to air and water movement.
- C. Construction roads shall be watered as needed to minimize dust.
- D. Existing trees, shrubs, and ground cover shall be retained as long as possible during the construction. Initial land clearing should be conducted only in those areas to be regraded or where construction is to occur. Areas to be cleared only for new vegetation or landscaping shall be stabilized with seed and mulch immediately following clearing.
- E. Vegetative cover is the most effective means of dust and erosion control, when appropriate. See sections on Temporary Seed, Permanent Seed, Mulch, and Sod of this Specification.
- F. When areas have been regraded and brought to final grade, they shall be stabilized using temporary or permanent seed and mulch or other measures.
- G. Mulch with mulch binders may be used as an interim dust control measure in areas where vegetation may not be appropriate.
- H. See sections on Temporary Seed, Permanent Seed, Sod, Mulch, Road/Parking Stabilization, and Construction Entrance of this Specification.

## 2.08 NETS AND MATS

- A. Mulch netting, erosion control matting, or turf reinforcement matting (TRM) shall be used on sloping areas as indicated in the Construction Drawings. Mats or nets and permanent seeding may be used as an alternate to sod for culvert entrances and grassed waterways. TRMs shall be used at the water line to control wave action in wet ponds. TRMs shall be used in accordance with manufacturer's recommendations. Erosion control matting may be used to stabilize channels and swales and on recently planted slopes to protect seedlings until they become established.
- B. Effective netting and matting shall require firm, continuous contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material.

- C. Nets and mats shall be suitable for their intended purpose and shall be as indicated in the Construction Drawings.

## 2.09 TEMPORARY DIVERSION DITCH

- A. Temporary diversion ditches shall be used to collect sediment-laden runoff from disturbed areas and direct it to a sediment pond where applicable. Temporary ditches are those expected to be in use for less than one year. Temporary diversion ditches do not require stabilization, unless otherwise indicated on the Drawings.
- B. Temporary diversion ditches shall have stable outlets. The combination of conditions of site, slopes, and soils should be so that the ditch can be maintained throughout its planned life.
- C. Temporary diversion ditches shall not be constructed below high sediment-producing areas unless land treatment practices or structural measures, designed to prevent damaging accumulations of sediment in the channels, are installed with or before the diversion.
- D. A typical diversion cross section consists of a channel and a supporting ridge. In the case of an excavated-type diversion, the natural ground serves as the diversion ridge. Diversion cross sections shall be adapted to the equipment that will be used for their construction and maintenance.
- E. The channel may be parabolic or trapezoidal in shape. V-shaped ditches shall not be constructed.
- F. Diversions shall be located so that water will empty onto an established area such as a stable watercourse, waterway, or structure.
- G. Any high sediment-producing area above a diversion shall be controlled by good land use management or by structural measures to prevent excessive sediment accumulation in the diversion channel.
- H. Temporary diversions above steep slopes or across graded rights-of-way shall have a berm with a minimum top width of 2 feet, side slopes of 2:1 or flatter and a minimum height of 18 inches measured from the channel bottom.
- I. Diversions installed to intercept flow on graded rights-of-way shall be spaced 200 to 300 feet apart.
- J. A level lip spreader shall be used at diversion outlets discharging onto areas already stabilized by vegetation.

## 2.10 LEVEL SPREADER

- A. Level spreaders shall be constructed at the outlets of temporary diversion ditches. Level spreaders shall also be constructed at outlets of permanent constructed waterways where they terminate on undisturbed areas.
- B. The length of the level spreader shall be constructed as shown on the Construction Drawings.

## 2.11 PERMANENT CONSTRUCTED WATERWAY

- A. Permanent constructed waterways shall be used to divert stormwater runoff from upland undisturbed areas around or away from areas to be disturbed during construction. A waterway expected to be in place for at least one year shall be considered permanent. Permanent waterways shall be lined with sod or permanent seeding and nets, mats, or TRMs.

## 2.12 PIPE SLOPE DRAIN

- A. Pipe slope drains shall be used whenever it is necessary to convey water down a steep slope, which is not stabilized or which is prone to erosion, unless paved ditch (flume) is installed.
- B. Contractor shall use a 10-inch diameter pipe or larger to convey runoff from areas up to one-third acre; 12-inch or larger pipe for up to half-acre drainage areas; and 18-inch pipe for areas up to one acre, unless otherwise specified in the Drawings. Multiple pipes shall be required for large areas, spaced as shown on the Drawings.
- C. The pipe shall be heavy duty flexible tubing designed for this purpose, e.g., non-perforated, corrugated plastic pipe, or specially designed flexible tubing.
- D. A standard flared end section or a standard T-section fitting secured with a watertight fitting shall be used for the inlet.
- E. Extension collars shall be 12-inch long sections of corrugated pipe. All fittings shall be watertight.

## 2.13 IMPACT STILLING BASIN

- A. Impact stilling basins shall be used at the outlet of culverts and storm sewers with calculated exit velocities greater than 15 feet per second when flowing full.

## 2.14 CHECK DAM

- A. Check dams shall be limited to use in small, open channels that drain 10 acres or less.
- B. Check dams shall not be used in streams.
- C. Check dams can be constructed of stones, coir logs, or wood fiber logs.
- D. Check dams shall be constructed prior to the establishment of vegetation.
- E. The maximum height of a check dam shall be three feet above the ground on which the rock is placed.
- F. The center of the portion of the check dam above the flat portion of the channel shall be at least 1 foot lower than the outer edges. The outer edges of the check dam shall extend up the side slopes of the channel to a point 3 feet in elevation above the center portion of the check dam or to the top of the side slopes.
- G. The maximum spacing between rock check dams in a ditch should be such that the toe

of the upstream dam is at the same elevation as the top of the next downstream dam.

- H. The spacing of coir and wood fiber check dams is one log every 100 feet for velocities of 5 fps, 50 feet for velocities between 5 and 7.5 fps, and 25 feet for velocities greater than 10 fps, unless otherwise shown in the Construction Documents.
- I. Stone check dams shall be constructed of KYTC Class II channel lining.
- J. Coir log or wood fiber log check dams shall be constructed of a single log with a diameter of at least 20 inches.

#### 2.15 SEDIMENT TRAP

- A. Sediment traps shall be installed below all disturbed areas of less than 5 acres that do not drain to a sediment pond.
- B. Erosion control practices such as seeding, mulching, sodding, diversion dikes, etc., shall be used in conjunction with sediment traps to reduce the amount of sediment flowing into the trap. The amount of sediment entering a trap can be reduced by the use of stabilized diversion dikes and ditches.
- C. The trap shall not be located in a stream. It shall be located to trap sediment-laden runoff before it enters the stream.
- D. Trap depth shall be at least 2 feet at the inlet and 4 feet at the outlet. Effective trap width shall be at least 10 feet and trap length shall be at least 30 feet.
- E. The Construction Drawings shall indicate the final disposition of the sediment trap after the upstream drainage area is stabilized. The Drawings shall indicate methods for the removal of excess water lying over the sediment, stabilization of the pond site, and the disposal of any excess material.

#### 2.16 SEDIMENT POND

- A. A sediment pond shall be installed at the outlet of a disturbed area of 5 acres or more. The maximum drainage area for a single pond is 100 acres.
- B. Design and construction shall comply with all federal, state, and local laws, ordinances, rules, and regulations regarding dams.
- C. Erosion control practices such as seeding, mulching, sodding, diversion dikes, etc., shall be used in conjunction with sediment ponds to reduce the amount of sediment flowing into the pond.
- D. The pond shall not be located in a stream. It shall be located to trap sediment-laden runoff before it enters the stream.
- E. Contractor shall construct the sediment pond as shown on the Drawings.
- F. Permanent ponds designed for stormwater detention or water quality treatment may serve as temporary sediment ponds if site conditions make the use of these structures desirable. At the time of conversion from a sediment pond to a permanent stormwater management pond, excess sediment shall be cleaned from the pond. If the pond is

converted to a water quality basin, the sand in the sand filter outlet shall be replaced with clean sand unless it is shown to be clean.

- G. The Drawings shall indicate the final disposition of the sediment pond after the upstream drainage area is stabilized. The Construction Drawings shall indicate methods for the removal of excess water lying over the sediment, stabilization of the pond site, and the disposal of any excess material.
- H. Vegetation shall be established upon completion of construction of the embankment, emergency spillway and other areas disturbed by construction.

## 2.17 SILT FENCE

- A. Silt fence shall be installed down-slope of areas to be disturbed prior to clearing and grading. Silt fence shall be situated such that the total area draining to the fence is not greater than one-fourth acre per 100 feet of fence. Silt fence shall be used for storm drain drop inlet protection and around soil stockpiles.
- B. Under no circumstances shall silt fences be constructed in streams or in swales or ditch lines or any area of concentrated flow where discharge rates are likely to exceed 1 cubic foot per second (cfs).
- C. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, and polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

<u>PHYSICAL PROPERTY</u>	<u>REQUIREMENTS</u>
Filtering Efficiency	80% (minimum)
Tensile Strength at 20%	50 lbs./linear inch (minimum)
Flow Rate	0.3 gal./ sq. ft/ min. (minimum)

- D. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected, usable construction life at a temperature range of 0°F to 120°F.
- E. Posts for synthetic fabric silt fences shall be either 2-inch by 2-inch wood or 1.33 pounds per linear foot steel with a minimum length of 5 feet. Steel posts shall have projections for fastening wire to them.
- F. Wire fence reinforcement for silt fences shall be a minimum of 36 inches in height, a minimum of 14 gauge and shall have a mesh spacing of no greater than 6 inches.

## 2.18 STORM DRAIN INLET PROTECTION

- A. Storm drain inlet protection may be utilized on drop inlets and curb inlets.
- B. Storm drain inlet protection shall only be used around drop inlets when the up-slope area draining to the inlet has no other or inadequate sediment control.
- C. The drainage area shall be no greater than 1 acre.

- D. The inlet protection device shall be constructed in a manner that will facilitate cleanout and disposal of trapped sediment and minimize interference with construction activities.
- E. Inlet protection devices shall be constructed in such a manner that any resultant ponding of stormwater will not cause flooding or excessive inconvenience or damage to adjacent areas, roadways, properties, or structures.
- F. Inlet protection devices are low flow filter devices, and as such shall be constructed in such a manner as to allow for higher flows to bypass into the storm drain system to prevent flooding of the roadway or downstream properties.

2.19 FILTER STRIP

- A. Filter strips shall be used on each side of permanent constructed channels.
- B. Filter strips shall only be used to remove sediment from overland flow. Filter strips are not effective in removing sediment from concentrated flows.
- C. If vegetative filters are proposed as a sediment control device and they do not already exist, they shall be planted and established prior to initiating land disturbing activities.
- D. The minimum filter strip width shall be 50 feet for streams, wetlands, and sinkholes. The minimum filter strip width shall be ten feet for constructed waterways.
- E. Where a post development floodplain or wet weather conveyance is being protected, filter strips shall be provided on each side. When a wetland or sinkhole is being protected, filter strips shall be provided around the perimeter.
- F. Contractor shall construct the filter strips as shown on the Drawings.
- G. Existing grass or grass/legume mixtures used as filter strips shall be dense and well established, with no bare spots. When establishing new seeding, consideration shall be given to wildlife needs and soil conditions on the site. The following chart provides a list of alternative grass and grass/legume mixtures:

SEEDING MIXTURE AND SITE SUITABILITY CHART

Seeding Mixture	Rate lbs/acre	Soil Suitability
Alfalfa <i>Or</i> Red Clover <i>Plus</i> Timothy <i>Or</i> Orchardgrass <i>Or</i> Bromegrass	6  10  4  6  6	Well Drained

Ladino Plus Timothy Or Orchardgrass Or Bromegrass	.05 4 6 8	Wet or Well- Drained
---	--------------------	-------------------------

**Notes:**

1. All seeding shall be in accordance with the seeding sections of this Specification.
2. Well drained sites include sites that are drained with tile as well as naturally well drained and droughty sites. Wet sites include sites that are excessively wet only a portion of the growing season.

**2.20 STREAM CROSSING**

- A. Stream crossings shall be used in cases where construction traffic, permanent traffic, or utilities must cross existing post development floodplains. If the drainage area exceeds 1 square mile and a structure is necessary, the structure must be designed by a professional engineer licensed in Kentucky and shall be considered a permanent structure.
- B. Temporary stream crossings are applicable to flowing streams with drainage areas less than one square mile. Temporary stream crossings shall be planned to be in service for the shortest practical period of time and to be removed as soon as their function is completed.
- C. All such structures, whether temporary or permanent, are subject to the rules and regulations of the U.S. Army Corps of Engineers for in-stream modifications (404 Permitting) and the Kentucky Division of Water (401 Certification). No stream crossing shall be installed without first obtaining all applicable local, state, and federal permits.

Where culverts are to be installed, compacted soil or rock shall be used to form the crossing. The depth of soil or rock cover over the culvert shall be equal to one-half the diameter of the culvert or 12 inches, whichever is greater. The sides of the fill shall be protected from erosion using the mulching and seeding erosion control measures specified in this Specification.

- D. All stream crossings shall be constructed in such a manner as to avoid flooding or excessive inconvenience or damage to adjacent areas, roadways, properties, or structures.
- E. When using a culvert crossing, the top of a compacted earth fill shall be covered with six inches of KYTC No. 57 stone.
- F. KYTC No. 57 stone shall also be used for the stone pads forming the crossing approaches.

**2.21 PUMP AROUND FLOW DIVERSION**

- A. A pump-around flow diversion shall be used to divert flow around construction activities occurring in a stream when those activities are reasonably expected to cause the erosion of sediment or deposition of sediment in the stream.

- B. Check dams to form the diversion shall span the banks of the stream. Maintain 1-foot freeboard (minimum) on the upstream and downstream checks.
- C. Check dams may be constructed of sandbags or may be a water-filled bladder such as an Aqua-Barrier.
- D. The dewatering flow from the work area shall be treated in a sediment-trapping device prior to discharge to the stream.
- E. Sandbags shall be woven polypropylene bags with approximate dimensions of 18-1/2 inches by 28 inches. Contractor shall tie the ends of filled bags closed using either draw strings or wire ties.

## 2.22 CONSTRUCTION DEWATERING

- A. Sediment-laden water shall be pumped to a dewatering structure before it is discharged.

## PART 3 – EXECUTION

### 3.01 GENERAL

- A. Erosion and sediment control practices shall be consistent with the requirements of the state and local regulatory agencies and in any case shall be adequate to prevent erosion of disturbed and/or regraded areas.
- B. Contractor is responsible for notifying the state regulatory agency concerning inclusion under the KPDES General Permit for Storm Water Discharges Associated with Construction Activities.
- C. Gravity sewer lines, force mains and water lines that cross streams shall be constructed by methods that maintain normal stream flow and allow for a dry excavation. Water pumped from the excavation shall be contained and allowed to settle prior to reentering the stream. Excavation equipment and vehicles shall operate outside of the flowing portion of the stream. Spoil material from the line excavation shall not be allowed to enter the flowing portion of the stream. The provisions of this condition shall apply to all types of utility line stream crossings.
- D. Removal of riparian vegetation in the utility line right-of-way shall be limited to that necessary for equipment access. Effective erosion and sedimentation control measures shall be employed at all times during the project to prevent degradation of waters of the Commonwealth. Site regrading and reseeding shall be accomplished with 14 days after disturbance.

### 3.02 MULCH

- A. Seed shall be applied prior to mulching except where seed is to be applied as part of a hydroseeder slurry containing mulch.
- B. Lime and fertilizer shall be incorporated, and surface roughening accomplished as needed prior to mulching in accordance with applicable sections of this Specification.



- C. Mulch materials shall be spread uniformly by hand or mechanically, so the soil surface is covered. During or immediately following application, the mulch shall be anchored or otherwise secured to the ground according to one of the following methods:
  - 1. Mechanical – Use a disk, crimper, or similar type tool set straight to punch or anchor the mulch material into the soil.
  - 2. Mulch Tackifiers/Nettings/Emulsions – Use according to the manufacturer's recommendations. This is a superior method in areas of water concentration to hold mulch in place.
  - 3. Wood Fiber – Wood fiber hydroseeder slurries may be used to tack straw mulch. This combination treatment is well suited to steep slopes and critical areas, and severe climate conditions.
- D. Mulch shall be anchored using a mulch anchoring tool, a liquid binder/tackifier, or mulch nettings. Nets and mats shall be installed to obtain firm, continuous contact between the material and the soil. Without such contact, the material is useless, and erosion occurs.
- E. A mulch anchoring tool is a tractor-drawn implement that is typically used for anchoring straw and is designed to punch mulch approximately two inches into the soil surface. Machinery shall be operated on the contour and shall not be used on slopes steeper than 3H:1V.
- F. When using liquid mulch binders and tackifiers, application shall be heaviest around edges of areas and at crests of ridges and banks to prevent wind blow. Remainder of area shall have binders/tackifiers spread uniformly in accordance with manufacturer's recommendations.
- G. When using a mulch net, it shall be used in conjunction with an organic mulch and shall be installed immediately after the application and spreading of the mulch. Mulch net shall be installed over the mulch except when the mulch manufacturer recommends otherwise.
- H. Excelsior blankets and mats with mulch are considered protective mulches and may be used alone on erodible soils and during all times of year. Erosion control mats shall be installed in accordance with manufacturer's recommendations.
- I. Mulched areas shall be inspected at least weekly and after each rainfall of one-half inch or more. When mulch material is found to be loosened or removed, the mulch cover shall be replaced within 48 hours.

### 3.03 TEMPORARY SEED

- A. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and anchoring.
- B. The needed erosion control practices, such as diversions, temporary waterways for diversion outlets, and sediment ponds, shall be installed prior to seeding.
- C. Prior to seeding, lime and fertilizer shall be worked into the soil with a disk harrow, springtooth harrow, or similar tools to a depth of two inches. On sloping areas, the final operation shall be on the contour.

- D. The seed shall be applied uniformly with a cyclone seeder, drill, cultipacker, seeder, or hydroseeder (slurry may include seed and fertilizer) preferably on a firm, moist seedbed. Seed shall be sown no deeper than one-fourth inch to one-half inch.
- E. The seedbed shall be firmed following seeding operations with a cultipacker, roller, or light drag.
- F. On sloping land, seeding operations shall be on the contour wherever possible.
- G. Mulch shall be applied, in the amounts described in the mulch section of this Specification, to protect the soil and provide a better environment for plant growth.
- H. New seed shall have adequate water for growth, through either natural means or irrigation, until plants are firmly established.
- I. Seeded areas shall be inspected at least weekly after planting and after each rainfall of one-half inch or more. Areas requiring additional seed and mulch shall be repaired within 48 hours.
- J. If vegetative cover is not established within 21 days, the area shall be reseeded.

#### 3.04 PERMANENT SEED

- A. During site preparation, topsoil shall be stockpiled for use in establishing permanent vegetation.
- B. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and anchoring.
- C. The needed erosion control practices, such as diversions, temporary waterways for diversion outlets, and sediment ponds, shall be installed prior to seeding.
- D. Prior to seeding, lime and fertilizer shall be worked into the soil with a disk harrow, springtooth harrow, or similar tools to a depth of four inches. On sloping areas, the final operation shall be on the contour.
- E. Where compacted soils occur, they shall be broken up sufficiently to create a favorable rooting depth of six to eight inches.
- F. The seed shall be applied uniformly with a cyclone seeder, drill, cultipacker, seeder, or hydroseeder (slurry may include seed and fertilizer) preferably on a firm, moist seedbed. Seed shall be sown no deeper than one-fourth inch to one-half inch.
- G. The seedbed shall be firmed following seeding operations with a cultipacker, roller, or light drag.
- H. On sloping land, seeding operations shall be on the contour wherever possible.
- I. Mulch shall be applied, in the amounts described in the mulch section of this Specification, to protect the soil and provide a better environment for plant growth.

- J. New seed shall have adequate water for growth, through either natural means or irrigation, until plants are firmly established.
- K. Seeded areas shall be inspected at least weekly after planting and after each rainfall of 0.5 inches or more. Areas requiring additional seed and mulch shall be repaired within 48 hours.
- L. If vegetative cover is not established (>70%) within 21 days, the area shall be reseeded. If 40 to 70 percent groundcover is established, seed and fertilize, using half of rates originally applied, and mulch. If less than 40 percent groundcover is established, follow original seedbed preparation methods, seeding and mulching specifications, and apply lime and fertilizer as needed according to soil tests.

### 3.05 SOD

- A. The area to be sodded shall be protected from excess runoff, as necessary, with appropriate BMPs.
- B. Prior to sodding, the soil surface shall be cleared of all trash, debris, and stones larger than one and one-half inches in diameter, and of all roots, brush, wire, and other objects that would interfere with the placing of the sod.
- C. Compacted soils shall be broken up sufficiently to create a favorable rooting depth of six to eight inches.
- D. Lime and fertilizer shall be worked into the soil with a disk harrow, springtooth harrow, or other suitable field equipment to a depth of four inches.
- E. After the lime and fertilizer have been applied and just prior to the laying of the sod, the soil in the area to be sodded shall be loosened to a depth of one inch. The soil shall be thoroughly dampened immediately after the sod is laid if it is not already in a moist condition.
- F. No sod shall be placed when the temperature is below 32°F. No frozen sod shall be placed nor shall any sod be placed on frozen soil.
- G. When sod is placed during the periods of June 15 to September 1 or October 15 to March 1, it shall be covered immediately with a uniform layer of straw mulch approximately one-half inch thick or so the green sod is barely visible through the mulch.
- H. Sod shall be carefully placed and pressed together so it will be continuous without any voids between the pieces. Joints between the ends of strips shall be staggered.
- I. On gutter and channel sodding, the sod should be carefully placed on rows or strips at right angles to the centerline of the channel (*i.e.*, at right angles to the direction of flow). The edge of the sod at the outer edges of all gutters shall be sufficiently deep so that surface water will flow over onto the top of the sod.
- J. On steep graded channels, each strip of sod shall be staked with at least two stakes not more than 18 inches apart.

- K. On slopes 3H:1V or steeper, or where drainage into a sod gutter or channel is one-half acre or larger, the sod shall be rolled or tamped, and then chicken wire, jute, or other netting shall be pegged over the sod for protection in the critical areas. The netting and sod shall be staked with at least two stakes not more than 18 inches apart. The netting shall be stapled on the side of each stake within two inches of the top of the stake. The stake should then be driven flush with the top of the sod.
- L. When stakes are required, the stakes shall be wood and shall be approximately ½ inch by ¾ inch by 12 inches. They shall be driven flush with the top of the sod with the flat side against the slope and on an angle toward the slope.
- M. Sod shall be tamped or rolled after placing and then watered. Watering shall consist of a thorough soaking of the sod and of the sod bed to a depth of at least 4 inches. The sod should be maintained in a moist condition by watering for a period of 30 days.
- N. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week to maintain moist soil to a depth of 4 inches. Watering shall be done during the heat of the day to prevent wilting. After the first week, sod shall be watered as necessary to maintain adequate moisture content.
- O. The first mowing of sod shall not be attempted until the sod is firmly rooted. No more than one-third of the grass leaf shall be removed by the initial and subsequent cuttings. Grass height shall be maintained between 2 inches and 3 inches.
- P. Where sod does not establish properly, the sod should be replaced immediately. Areas requiring resodding should be prepared in the same manner as the original installation.

### 3.06 ROAD/PARKING STABILIZATION

- A. The roadbed or parking surface shall be cleared of all vegetation, roots, and other objectionable material.
- B. All roadside ditches, cuts, fills, and disturbed areas adjacent to parking areas and roads shall be stabilized with appropriate temporary or permanent vegetation according to the applicable sections of this Specification.
- C. Geotextile filter fabric may be applied beneath the stone for additional stability in accordance with fabric manufacturer's specifications.
- D. Both temporary and permanent roads and parking areas may require periodic top dressing with new gravel. Seeded areas adjacent to the roads and parking areas shall be checked regularly to ensure that a vigorous stand of vegetation is maintained. Roadside ditches and other drainage structures shall be checked once each week to ensure that they do not have silt or other debris that reduces their effectiveness.

### 3.07 CONSTRUCTION ENTRANCE

- A. Vegetation, roots, and all other obstructions shall be cleared in preparation for grading. Prior to placing geotextile (filter fabric), the entrance shall be graded and compacted to 80% of standard proctor density.

- B. To reduce maintenance and loss of aggregate, the geotextile shall be placed over the existing ground before placing the stone for the entrance. Stone shall be placed to depth of 6 inches or greater for the entire width and length of the stabilized construction entrance.
- C. If wash racks are used, they shall be installed according to manufacturer's specifications.
- D. The stabilized construction entrance shall be inspected once each week and after there has been a high volume of traffic or a storm event greater than 0.2 inches.
- E. The entrance shall be maintained in a condition that will prevent tracking or flow of sediments onto public rights-of-way; This may require periodic top dressing with additional stone, as conditions demand, and repair and/or cleanout of any structures used to trap sediment.
- F. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately.

### 3.08 DUST CONTROL

- A. See Articles on Temporary Seed, Permanent Seed, Sod, Mulch, Road/Parking Stabilization, and Construction Entrance of this Specification Section.
- B. When construction is active on the site, dust control shall be implemented as needed.
- C. When using tillage as a dust control measure, Contractor shall begin plowing on windward side of area. Chisel-type plows spaced about 12 inches apart, spring-toothed harrow, and similar plows are examples of equipment that may produce the desired effect.
- D. The site shall be observed daily for evidence of windblown dust and reasonable steps shall be taken to reduce dust whenever possible. When construction on a site is inactive for a period, the site shall be inspected at least weekly for evidence of dust emissions or previously windblown sediments. Dust control measures shall be implemented or upgraded if the site inspection shows evidence of wind erosion.

### 3.09 NETS AND MATS

- A. Nets and mats shall be installed according to the manufacturer's recommendations. In the event that the manufacturer's recommendations conflict with any requirement of this Specification, the most conservative requirement, in terms of protection of public health and the environment, shall govern.

### 3.10 TEMPORARY DIVERSION DITCH

- A. All dead furrows, ditches or other depressions to be crossed shall be filled before construction begins or as part of construction, and the earth fill used to fill the depressions shall be compacted using the treads of the construction equipment. All old terraces, fencerows, or other obstructions that will interfere with the successful operation of the diversion shall be removed.

- B. The base for the diversion ridge shall be prepared so that a good bond is obtained between the original ground and the fill material. Vegetation shall be removed and the base shall be thoroughly disked prior to placement of fill.
- C. The earth materials used to construct the earth fill portions of the diversions shall be obtained from the diversion channel or other approved source.
- D. The earth fill materials used to construct diversions shall be compacted by running the construction equipment over the fill in such a manner that the entire surface of the fill will be traversed by not less than one tread track of the equipment.
- E. When an excess of earth material results from cutting the channel cross section and grade, it shall be deposited adjacent to the supporting ridge unless otherwise directed.
- F. The completed diversion shall conform to the cross section and grade shown on the Construction Drawings.
- G. Temporary or permanent seeding and mulch shall be applied to the berm or ditch immediately following its construction. Contractor shall triple-seed areas below the flow line, and shall use erosion control blankets or turf reinforcement mats as needed.
- H. Bare and vegetated diversion channels shall be inspected regularly to check for points of scour or bank failure; rubbish or channel obstruction; rodent holes, breaching, or settling of the ridge; and excessive wear from pedestrian or construction traffic.
- I. Damaged channels or ridges shall be repaired at the time damage is detected. Sediment deposits shall be removed from diversion channels and adjoining vegetative filter strips regularly.
- J. Diversions shall be reseeded and fertilized as needed to establish vegetative cover.

### 3.11 LEVEL SPREADER

- A. The minimum acceptable width shall be 6 feet. The depth of the level spreader as measured from the lip shall be at least 6 inches and the depth shall be uniform across the entire length of the measure.
- B. The grade of the channel for the last 15 feet entering the level spreader shall be less than or equal to 1%.
- C. The level lip of the spreader shall be constructed on zero percent grade to insure uniform conversion of channel flow to sheet flow.
- D. Level spreaders shall be constructed on undisturbed soil.
- E. The entrance to the spreader shall be graded in a manner to insure that runoff enters directly onto the zero percent graded channel.
- F. Storm runoff converted to sheet flow shall discharge onto undisturbed areas stabilized with vegetation.
- G. All disturbed areas shall be stabilized immediately after construction is completed in accordance with the mulching and vegetation requirements of this Specification.

- H. The level spreader shall be inspected after each storm event and at least once each week. Any observed damage shall be repaired immediately.

### 3.12 PERMANENT CONSTRUCTED WATERWAY

- A. All ditches or other depressions to be crossed shall be filled before construction begins or as part of construction, and the earth fill used to fill the depressions shall be compacted using the treads of the construction equipment. All old terraces, fence rows, or other obstructions that will interfere with the successful operation of the channel shall be removed.
- B. The earth materials used to construct the earth fill portions of the channel shall be obtained from the excavated portion of the channel or other approved source.
- C. The earth fill materials used to construct the channel shall be compacted by running the construction equipment over the fill in such a manner that the entire surface of the fill will be traversed by at least one tread track of the equipment.
- D. The completed channel shall conform to the cross section and grade shown on the Construction Drawings.
- E. Channels shall be inspected regularly to check for points of scour or bank failure; rubbish or channel obstruction; rodent holes; breaching; and excessive wear from pedestrian or construction traffic.
- F. Channels shall be repaired at the time damage is detected. Sediment deposits shall be removed from adjoining vegetative filter strips when they are visible.
- G. Channels shall be reseeded and fertilized as needed to establish vegetative cover.
- H. The subgrade of paved channels shall be constructed to the required elevations. All soft sections and unsuitable material shall be removed and replaced with suitable material. The subgrade shall be thoroughly compacted and shaped to a smooth, uniform surface. The subgrade shall be moist when pouring concrete.
- I. Before permanent stabilization of the slope, the structure shall be inspected after each rainfall. Any damages to the paved channel or slope shall be repaired immediately.

### 3.13 PIPE SLOPE DRAIN

- A. The pipe slope drain shall be placed on undisturbed or well-compacted soil.
- B. Soil around and under the entrance section shall be hand-tamped in 4-inch to 8-inch lifts to the top of the dike to prevent piping failure around the inlet.
- C. Filter fabric shall be placed under the inlet and extended 5 feet in front of the inlet and be keyed in 6 inches on all sides to prevent erosion.
- D. Backfilling around and under the pipe with stable soil material hand compacted in lifts of 4 inches to 8 inches shall be done to ensure firm contact between the pipe and the soil at all points.

- E. The pipe slope drain shall be securely staked to the slope using grommets provided for this purpose at intervals of 10 feet or less.
- F. All slope drain sections shall be securely fastened together and have watertight fittings.
- G. The pipe shall be extended beyond the toe of the slope and discharged at a non-erosive velocity into a stabilized area or to a sediment trap or pond.
- H. The pipe slope drain shall have a minimum slope of 3 percent or steeper.
- I. The height at the centerline of the earth dike shall range from a minimum of 1.0 foot over the pipe to twice the diameter of the pipe measured from the invert of the pipe. It shall also be at least 6 inches higher than the adjoining ridge on either side. At no point along the dike will the elevation of the top of the dike be less than 6 inches higher than the top of the pipe.
- J. All areas disturbed by installation or removal of the pipe slope drain shall be immediately stabilized.
- K. The pipe slope drain shall be inspected after every rainfall and at least weekly. Any necessary repairs shall be made immediately.
- L. Contractor shall check to see that water is not bypassing the inlet and undercutting the inlet or pipe. If necessary, Contractor shall install headwall or sandbags.
- M. Contractor shall check for erosion at the outlet point and shall check the pipe for breaks or clogs. Contractor shall install additional outlet protection if needed and immediately repair the breaks and clean any clogs.
- N. Contractor shall not allow construction traffic to cross the pipe slope drain and shall not place any material on it.
- O. If a sediment trap has been provided, it shall be cleaned out when the sediment level reaches 1/3 the design volume.
- P. The pipe slope drain shall remain in place until the slope has been completely stabilized or up to 30 days after permanent slope stabilization.

### 3.14 IMPACT STILLING BASIN

- A. Construction specifications for impact stilling basins are provided in the Construction Drawings.

### 3.15 CHECK DAM

- A. Stone shall be placed by hand or mechanically as necessary to achieve complete coverage of the ditch and to ensure that the center of the dam is at least 1 foot lower than the outer edges. Stone shall also be placed to extend 3 feet in elevation above the center portion of the check dam or to the top of the channel side slopes.
- B. Coir and wood fiber logs shall be laid on the channel bottom.
- C. Check dams shall be removed when their useful life has been completed. In temporary



ditches and swales, check dams shall be removed and the ditch filled in when it is no longer needed. In permanent channels, check dams shall be removed when a permanent lining can be installed. In the case of grass-lined ditches, check dams shall be removed when the grass has matured sufficiently to protect the ditch or swale. The area beneath the check dams shall be seeded and mulched or sodded (depending upon velocity) immediately after check dams are removed.

- D. If stone check dams are used in grass-lined channels that will be mowed, care shall be taken to remove all stone from the channel when the dam is removed. This shall include any stone that has washed downstream.
- E. Regular inspections shall be made to ensure that the check dam is in good working order and the center of the dam is lower than the edges. Erosion caused by high flows around the edges of the dam shall be corrected immediately, and the dam shall be extended beyond the repaired area.
- F. Check dams shall be checked for sediment accumulation after each rainfall. Sediment shall be removed before or when it reaches one-third of the original height.
- G. Check dams shall remain in place and operational until the drainage area and channel are completely stabilized, or up to 30 days after the permanent site stabilization is achieved.

### 3.16 SEDIMENT TRAP

- A. The area to be excavated shall be cleared of all trees, stumps, roots, brush boulders, sod, and debris. All channel banks and sharp breaks shall be sloped to no steeper than 1:1. All topsoil containing excessive amounts of organic matter shall be removed.
- B. Seeding, fertilizing, and mulching of the material taken from the excavation shall comply with the applicable soil stabilization sections of this Specification.
- C. Construction specifications for sediment traps are provided in the Construction Drawings.
- D. Any material excavated from the trap shall be placed in one of the following ways so that it will not be washed back into the trap by rainfall:
  - 1. uniformly spread to a depth not exceeding 3 feet and graded to a continuous slope away from the trap
  - 2. uniformly placed or shaped reasonably well with side slopes assuming the natural angle of repose for the excavated material behind a berm width not less than 12 feet.
- E. Sediment shall be removed from the trap when the capacity is reduced to one third of the design volume. Contractor shall follow the methods for disposing of sediment removed from the trap as shown in the Construction Drawings.

### 3.17 SEDIMENT POND

- A. The foundation area shall be cleared of all trees, stumps, roots, brush boulders, sod, and debris. All channel banks and sharp breaks shall be sloped to no steeper than 1:1. All topsoil containing excessive amounts of organic matter shall be removed. The surface of the foundation area shall be thoroughly scarified before placement of the embankment material.
- B. A cutoff trench shall be backfilled with suitable material. The trench shall be kept free of standing water during backfill operations.
- C. The pipe conduit barrel shall be placed on a firm foundation. Selected backfill material shall be placed around the conduit in layers, and each layer shall be compacted to at least the same density as the adjacent embankment. All compaction within 2 feet of the pipe spillway shall be accomplished with hand-operated tamping equipment.
- D. All borrow areas outside the pond and in the drainage area shall be graded and left in such a manner that water will not be ponded.
- E. The material placed in the fill shall be free of all sod, roots, frozen soil, stones more than 6 inches in diameter, and other objectionable material. The placing and spreading of the fill material shall occur in approximately 6-inch horizontal layers or of such thickness that the required compaction can be obtained with the equipment used. Each layer shall be compacted in a way that will result in achieving 95 percent of the maximum standard dry density.
- F. The distribution and gradation of materials throughout the fill shall be such that there will be no lenses, pockets, stakes, or layers of material differing substantially in texture or gradation from the surrounding material. Where it is necessary to use materials of varying texture and gradation, the more impervious material shall be placed in the upstream and center portions of the fill.
- G. The moisture content of fill material shall be such that the required degree of compaction can be obtained with the equipment used.
- H. Fill shall not be placed on frozen, slick, or saturated soil.
- I. The topsoil material saved in the site preparation shall be placed as a top dressing on the surface of the emergency spillways, embankments, and borrow areas. It shall be evenly spread.
- J. A protective cover of herbaceous vegetation shall be established on all exposed surfaces of the embankment, spillway, and borrow areas to the extent practical under prevailing soil and climatic conditions.
- K. Seedbed preparation, seeding, fertilizing, and mulching shall comply with the applicable sections of this Specification.
- L. Any material excavated from the pond shall be placed in one of the following ways so that its weight will not endanger the stability of the side slopes and where it will not be washed back into the pond by rainfall:
  - 1. uniformly spread to a depth not exceeding 3 feet and graded to a continuous

slope away from the pond.

2. uniformly placed or shaped reasonably well with side slopes assuming the natural angle of repose for the excavated material behind a berm width not less than 12 feet.

- M. Sediment shall be removed from the pond when the capacity is reduced to one third of the design volume. Contractor shall follow the methods for disposing of sediment removed from the pond as shown in the Construction Drawings.

### 3.18 SILT FENCE

- A. This Article provides construction specifications for silt fences using synthetic fabric. See the Construction Drawings for additional detail.
- B. Posts shall be spaced a maximum of 10 feet apart at the barrier location and driven securely into the ground (minimum of 12 inches). When necessary because of rapid runoff, post spacing shall not exceed 6 feet.
- C. A trench shall be excavated at least 6 inches wide and 6 inches deep along the line of posts and upslope from the barrier.
- D. A wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy-duty wire staples at least 1 inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of 2 inches and shall not extend more than 36 inches above the original ground surface.
- E. The filter fabric shall be stapled or wired to the fence, and 12 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
- F. At joints, filter fabric shall be lapped with terminating posts with a minimum overlap of 3 feet.
- G. The trench shall be backfilled and soil compacted over the filter fabric.
- H. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.
- I. Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately. Knocked down fences shall be repaired at the end of each day.
- J. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and if the barrier is still necessary, the fabric shall be replaced promptly.
- K. Sediment deposits shall be removed after each storm event or when deposits reach approximately one-third the height of the barrier.
- L. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer

required shall be dressed to conform to the existing grade, prepared, and seeded.

M. Silt fences shall be replaced every 6 months.

### 3.19 STORM DRAIN INLET PROTECTION

A. For silt fence drop inlet protection, the following specifications apply:

1. For stakes, Contractor shall use 2 x 4-inch wood (preferred) or equivalent metal with a minimum length of 3 feet.
2. Stakes shall be evenly spaced around the perimeter of the inlet a maximum of 3 feet apart and securely driven into the ground, approximately 18 inches deep.
3. To provide needed stability to the installation, Contractor shall frame with 2 x 4-inch wood strips around the crest of the overflow area at a maximum of 1.5 feet above the drop inlet crest and shall brace diagonally.
4. Contractor shall place the bottom 12 inches of the fabric in a trench and backfill the trench with at least 4 inches of crushed stone or 12 inches of compacted soil.
5. Contractor shall fasten fabric securely to the stakes and frame. Joints shall be overlapped to the next stake.

B. For sod drop inlet protection, sod shall be placed to form a turf mat covering the soil for a distance of 4 feet from each side of the inlet structure. Soil preparation and sod placement shall be in accordance with the section entitled Sod.

C. For gravel curb inlet protection, the following specifications apply:

1. Wire mesh with ½-inch openings shall be placed over the curb inlet opening so that at least 12 inches of wire extends across the concrete gutter from the inlet opening.
2. KYTC No. 2 Coarse Aggregate shall be piled against the wire so as to anchor it against the gutter and inlet cover and to cover the inlet opening completely.
3. This type of device must never be used where overflow may endanger an exposed fill slope. Consideration shall also be given to the possible effects of ponding on traffic movement, nearby structures, working areas, and adjacent property.

D. For block and gravel curb inlet protection, the following specifications apply:

1. Two concrete blocks shall be placed on their sides abutting the curb at either side of the inlet opening to act as spacer blocks.
2. A 2-inch by 4-inch stud shall be cut and placed through the outer holes of each spacer block to help keep the front blocks in place.
3. Concrete blocks shall be placed on their sides across the front of the inlet and abutting the spacer blocks.

4. Wire mesh shall be placed over the outside of the concrete blocks to prevent stone from being washed through the holes in the blocks. Wire with ½-inch openings shall be used
  5. KYTC No. 2 Coarse Aggregate shall be piled against the wire to the top of the barrier.
- E. For stone-filled corrugated pipe curb inlet protection, the following specifications apply:
1. Two concrete "L" blocks shall be placed on their sides, with one leg fitting into the mouth of the curb opening.
  2. A 6-inch corrugated pipe shall be filled with stone and covered with a filter sock.
  3. The stone-filled pipe will be placed in front of the two concrete "L" blocks and extend a minimum of the width of the curb inlet opening on either side. The total length of the stone filled pipe shall be three times the width of the curb inlet opening.
- F. The structure shall be inspected after each rain, and repairs made as needed.
- G. Sediment shall be removed, and the device restored to its original dimensions when the sediment has accumulated to one-third the design depth of the filter. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
- H. If a stone filter becomes clogged with sediment so that it no longer adequately performs its function, the stone must be pulled away from the blocks, cleaned, and replaced.
- I. Structures shall be removed after the drainage area has been properly stabilized.

### 3.20 FILTER STRIP

- A. When planting filter strips, Contractor shall prepare seedbed, incorporate fertilizer, and apply mulch consistent with the seeding sections of this Specification. Filter strips using areas of existing vegetation shall be over seeded, as necessary, with the specified mixtures to obtain an equivalent density of vegetation. The over seeding shall be accomplished prior to any land disturbing activities.
- B. Filter strips shall be inspected regularly to ensure that a healthy vegetative growth is maintained. Any bare spots or spots where sediment deposition could lead to the destruction of vegetation shall be repaired.
- C. Filter strips shall be fertilized once each year in the fall.
- D. Irrigation shall be used as necessary to maintain the growth of the vegetation in the filter strip.
- E. Sediment shall be removed when it becomes visible in the filter.
- F. Construction traffic shall not be driven on or over filter strips.

### 3.21 STREAM CROSSING

- A. Clearing and excavation of the streambed and banks shall be kept to a minimum.
- B. The structure shall be removed as soon as it is no longer necessary for project construction.
- C. Upon removal of the structure, the stream shall immediately be reshaped to its original cross section and properly stabilized.
- D. The approaches to the structure shall consist of stone pads with a minimum thickness of 6 inches, a minimum width equal to the width of the structure, and a minimum approach length of 25 feet on each side.
- E. The structure shall be inspected after every rainfall and at least once a week and all damages repaired immediately.

### 3.22 PUMP-AROUND FLOW DIVERSION

- A. Operations shall be scheduled such that diversion installation, in-stream excavation, in-stream construction, stream restoration, and diversion removal are completed as quickly as possible. Contractor shall not construct in a stream when rainfall is expected during the time excavation will be occurring in the stream.
- B. Check dams shall be installed across the stream during low flow conditions.
- C. Stream flow shall be pumped around the check dams. Outlet protection shall be installed as required at the discharge point.
- D. Contractor shall dewater the work area and pump into a sediment trapping device.
- E. Contractor shall complete construction activities across the stream.
- F. Contractor shall restore the streambed and banks.
- G. Contractor shall remove sandbags and shut down pumping operation. (Salvage sandbags for future use if multiple stream crossings are required on the project.) Contractor shall remove all sandbags from the stream, including damaged and empty bags.
- H. Pumps shall be manned around-the-clock when the pump-around diversion is in the stream.
- I. This control provides short-term diversion of stream flow (typically 1 day to 3 days). Additional sandbags or pumps may be required to maintain 1-foot freeboard on the sandbag checks if flow conditions change.
- J. Contractor shall add sandbags as required to seal leaks in checks.

### 3.23 CONSTRUCTION DEWATERING

- A. Contractor shall follow the specifications for sediment traps and basins. The manufacturer's recommendations shall be followed for commercial products.

- B. The dewatering structure shall be inspected frequently to ensure it is functioning properly and not overtopping. Accumulated sediment shall be spread out on site and stabilized or disposed of offsite.

3.24 KPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

- A. The Contractor is responsible for electronically filing the appropriate state Notice of Intent (NOI-SWCA) letter at least seven (7) days prior to start of construction activity. The Notice of Intent (NOI) is a Kentucky Pollution Discharge Elimination System (KPDES) permit application as provided by the Kentucky Revised Statutes, Chapter 224. This application is required to be submitted for construction projects that disturb one or more acres of land.
- B. The NOI requires the inclusion of the descriptions of (but is not limited to) the following items:
  - 1. Names and designated uses of any receiving waters
  - 2. Anticipated number and locations of discharge points
  - 3. Identification of planned construction in or along a water body
- C. A topographic map showing project boundaries, areas to be disturbed, locations of anticipated discharge points and receiving waters is also required to be submitted with the NOI.
- D. If the construction site is near a designated "High Quality/Impaired Waters" or a "Cold Water Aquatic Habitat Waters, Exceptional Waters, Outstanding National/State Resource Waters," additional items and/or individual permits will be required.
- E. The NOI form requires an SIC code. The link to the SIC codes is <http://www.osha.gov/pls/imis/sicsearch.html>. The following are the typical construction SIC codes utilized:
  - 1542 – Building Construction, nonresidential, except industrial and warehouses
  - 1623 – Water Main Construction, Sewer Construction
  - 1629 – Water and Wastewater Treatment Plant Construction
  - 1711 – Water Pump Installation
  - 1781 – Drilling Water Wells
- F. The Contractor is responsible for implementing the approved Stormwater Pollution Prevention Plan (SWPPP) prior to commencement of site disturbance. The SWPPP shall include erosion prevention measures and sediment and pollutant control measures which are installed and maintained to minimize discharges of sediments and other pollutants from a 2-year, 24-hour storm event. The SWPPP must be kept at the site and available for review by LFUCG and state officials.
- G. The Contractor is responsible for the description of procedures to maintain erosion and sediment control measures during the period of construction.

- H. The Contractor is responsible for identifying each Contractor and Subcontractor who will install each SWPPP erosion and sediment control measure.
- I. Each Contractor and Subcontractor shall sign a statement certifying the awareness of the requirements of the SWPPP related documents. Certification is attached at the end of this section.
- J. The Contractor shall not start land disturbing activities until written permit coverage is obtained from the Kentucky Division of Water.
- K. The inspection by qualified personnel, provided by the Contractor, of the site as follows:
  - 1. at least once every seven (7) calendar days, and
  - 2. within 24 hours after any storm event of 0.5 inch or greater
- L. The Contractor is responsible for completing and maintaining the required Self-Inspection Forms. A sample is included in this specification Section.
- M. Amendments to the approved SWPPP shall be made and implemented as necessary through the course of the construction project if inspections or investigations by the Contractor's inspector, site staff, or by local, state, or federal officials determine that the existing sediment control measures, erosion control measures, or other site management practices are ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the construction site. All plan amendments shall be noted on the copy of the SWPPP maintained at the project site.
- N. Upon completion of the project and establishment of all permanent erosion and sediment control structures and devices, the Contractor shall submit the Notice of Termination (NOT) form to the Kentucky Division of Water, the LFUCG Division of Water Quality, and the LFUCG Division of Engineering.
- O. All subcontractors shall be required to comply with the requirements of the state permit and the Stormwater Pollution Prevention Plan (SWPPP).
- P. Where to submit:
  - 1. Complete KPDES FORM NOI-SW at the following website:  
<https://dep.gateway.ky.gov/eForms/default.aspx?FormID=7>
  - 2. Do not initiate work until receiving approval from the Kentucky Division of Water.
  - 3. A complete copy of the NOI submittal shall also be provided to the following for approval/coverage verification:

Division of Water Quality  
125 Lisle Industrial Avenue, Suite 180  
Lexington, KY 40511



Division of Engineering  
Lexington-Fayette Urban County Government  
101 E. Vine St.  
4<sup>th</sup> Floor  
Lexington, KY 40507

3.25 LFUCG Land Disturbance Permit

- A. The Contractor shall obtain a Land Disturbance Permit (LDP) from the LFUCG Division of Engineering, after the LFUCG Division of Water Quality inspects the installation of the best management practices as required by the Stormwater Pollution Prevention Plan (SWPPP). The site grading plan shall show the original and finish grade contours. The grading plan shall be in conformance with the SWPPP.
- B. LDP is only required for areas of disturbances 5,000 sqft and above.
- C. Where to obtain:

Division of Engineering  
Lexington-Fayette Urban County Government  
101 E. Vine St.  
4<sup>th</sup> Floor  
Lexington, KY 40507  
(859) 258-3410  
Attn: Land Disturbance Permit Section

- D. All excess earthen/rock materials hauled off the site to a location in Fayette County shall be hauled to a site permitted by the Kentucky Division of Water and the LFUCG. The haul site must be permitted in accordance with these Specifications.

## LFUCG LAND DISTURBANCE PERMIT APPLICATION AND ESC PLAN CHECKLIST

OWNER / DEVELOPER Name: \_\_\_\_\_ Date: \_\_\_\_\_ Zone: \_\_\_\_\_  
 Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Contractor Name and Address: \_\_\_\_\_ Reg #: \_\_\_\_\_  
 Contact Name, Phone/ FAX/Email: \_\_\_\_\_

ITEM DESCRIPTION	Y	N	N/A	PAGE #	NOTES
<b>I. Permits:</b>					
KY Construction Permit (KYR10 or Indvid)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
USCOE 404 Permit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
KYDOW 401 Water Quality Cert.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
KY Stream Construction Permit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
FEMA LOMR or CLOMR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<b>II. BMPS:</b>					
<b>Site Preparation:</b>					
Phasing plan for large projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Maximum disturbed area = 25 acres
Limits of disturbance clearly marked	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		25 foot undisturbed buffer strip along streams
Construction Entrance/ Exit Pad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		No. 2 stone w/ filter fabric, min. 50 ft long (100' where practical)
Temporary Diversion (Berm or Ditch)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Offsite (clean) water routed around disturbed area
Stream Crossings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Not allowed without US Army Corps 404 permit
Concrete Washout Area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		One washout pit for every 40 lds
<b>Soil Stabilization:</b>					
Seeding/sodding schedule/timing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Applied within 14 days of reaching final grade or suspending work
<b>Slope Protection:</b>					
Silt Fence downslope of bare areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Silt Fence installed along contour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Erosion Control Blankets on slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Conforms with Fig. 11-1 in LFUCG Stormwater Manual
<b>Drainage System Control:</b>					
Inlets Protected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Pipe Outfall Erosion Prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Channel Lining	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Sodding or seed w/ blankets/mats immediately after construction
Check Dams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Max drainage area = 10 acres
<b>Sediment Basins and Traps:</b>					
Sediment Traps (drainage area < 5 ac)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Minimum volume = 2yr-24hr runoff volume
Sediment Basins (drainage area = > 5 ac)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Minimum volume = 2yr-24hr runoff volume
<b>Good Housekeeping:</b>					
Material storage addressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Spill Prevention and Control addressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Dust control addressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Dewatering operations are filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<b>Narrative:</b>					
Schedule/sequence for BMP Installation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
BMP Inspection Requirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Every 7 days, or every 14 days and after 0.5" of rainfall
BMP Maintenance Requirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Roadway Cleaning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

LFUCG-USE ONLY: Review Date: \_\_\_\_\_ Status: In Compliance: Y N Additional Info Needed: Y N

Reviewed By: \_\_\_\_\_ Department: \_\_\_\_\_

Comments / Items Missing or Incomplete:

Form Effective Date - January 13, 2011

50029-008:11/15/2018  
 CONFORMED SET

02372-32 LFUCG – WH WWTP FINAL CLARIFIERS  
 NO. 7 & NO. 8 STRUCTURAL REPAIRS

## Kentucky Best Management Practices Plan • Construction Site Inspection Report

Company:	Site:	County:
Site Operator:		Date:
Receiving Water:	Total Site Area (acres):	# Disturbed Acres:
Inspector Name:	Inspector Qualifications:	
Inspection Type: Weekly or ½ Inch Rain	Days Since Last Rainfall _____	# Inches of Last Rainfall: _____

### Field Inspection Observations

BMP Category	Compliance			Field Indicators for Compliance
	Yes	No	N/A	
Project Operations				Notice of Intent (KPDES permit) and other local/state permits on file BMP Plan on site and available for review Project timing/schedule and activities following BMP Plan Weekly inspection and rain-event reports on BMPs available for review Diversions, silt checks/traps/basins, and silt fences/barriers installed prior to clearing Grading and clearing conducted in phases to minimize exposed soil areas No vegetation removal or operations in stream or sinkhole buffer area (25-50 ft min) Rock pad in place on all construction site exits leading to paved roads No sediment, mud, or rock on paved public roads in project area Dust control if needed when working in residential areas during dry conditions
Drainage Management				Upland runoff diverted around bare soil areas with vegetated/lined ditches/berms Drainage channels exiting the site are lined with grass/blanket/rock and stabilized Discharges from dewatering operations cleaned in silt fence enclosure or other filter No muddy runoff leaving site after rains up to 1½ inches
Erosion Protection				Exposed soil seeded/mulched after 2 weeks if no work is planned for the next 7 days Soils on steep slopes seeded/mulched/blanketed as needed to prevent rutting
Sediment Barriers				Silt fence, rock filter, or other sediment barrier below all bare soil areas on slopes Barrier installed across slope on the contour, trenched in, posts on downhill side Multiple sediment barriers at least 125 ft apart on unseeded slopes steeper than 4:1 J-hook interceptors along silt fence where heavy muddy flows run along fencing No visible undercutting or bypassing or blowout of sediment barrier Accumulated sediment is less than halfway to the top of sediment barrier
Slope Protection				Slopes tracked, disked, or conditioned after final grade is established Slopes seeded, mulched, or blanketed within 21 days, no unmanaged rills or gulying Heavy downslope flows controlled by lined downdrain channels or slope drain pipes No muddy runoff from slopes into streams, rivers, lakes, or wetlands
Inlet Protection				Inlet dam/device or filtration unit placed at all inlets receiving muddy flows No visible undercutting, bypassing, or blowout of inlet protection dam or device Accumulated sediment is less than halfway to the top of the inlet protection dam/device
Outlet Protection				High flow discharges have rock or other flow dissipaters of adequate sizing at outlet Culvert outlets show no visible signs of erosion/scour, bank failure, or collapse
Ditch and Channel Stabilization				No unmanaged channel bank erosion or bottom scouring visible within or below site Ditches with slopes more than 3% have check dams spaced as needed, if not grassed Ditch check dams tied in to banks, with center 4" lower than sides, and no bypassing Ditches with slopes of up to 5% are thickly seeded with grass (minimum requirement) Ditches 5% to 15% are lined with thick grass and erosion control blankets as needed Ditches 15% to 33% are lined with thick grass and matting or other approved product Ditches exceeding 33% are paved or lined with rock or other approved product

Sediment Traps and Basins			Storage volume is at least 134 cubic yards for each acre of bare soil area drained Trap or basin is seeded/mulched and stabilized; no collapsing sidewalls or banks Outlet structure is stable and consists of rock-lined notched overflow or outlet riser Rock overflow is 6" lower in center to control overflow discharge Outlet riser pipe has concrete & rock base, ½ inch holes every 3" to 6", and trash rack Area near pipe outlet or overflow is stable, with no scour or erosion Sediment removed before trap or basin is halfway full; disposal is away from ditches
Maintenance of EPSC Management Practices			Sediment behind silt fence and other filters does not reach halfway to top Sediment traps and basins are less than half full of sediment Gullies repaired, silt fences and other controls inspected and repaired/replaced Written documentation of controls installed, inspection results, and repairs performed All controls removed and areas graded, seeded, and stabilized before leaving site
Materials Storage, Handling, and Cleanup			Materials that may leach pollutants stored under cover and out of the weather Fuel tanks located in protected area with double containment system Fuel and/or other spills cleaned up promptly; no evidence of unmanaged spills No evidence of paint, concrete, or other material washouts near drain inlets No storage of hazardous or toxic materials near ditches or water bodies
Waste Disposal			Trash, litter, and other debris in proper containers or properly managed No litter or trash scattered around on the construction site Provisions made for restroom facilities and/or other sanitary waste management Sanitary waste facilities clean and serviced according to schedule No disposal of any wastes into curb or other inlets, ditches, streams, or water bodies

**Inspection Notes and Key Observations**

**List of Stabilized Areas: Vegetation is Established; Ditches are Stabilized; No Exposed Soil**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Other Notes or Observations:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Corrective Actions Taken and/or Proposed Revisions to BMP Plan:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

*I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System (KPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.*

Signature of Inspector: \_\_\_\_\_

CONTRACTOR AND SUBCONTRACTOR CERTIFICATIONS

*SWPPP Files, Updates, and Amendments*

This SWPP Plan and related documents (e.g., NOI, inspection reports, US ACE permits, etc.) will be kept on file at the construction site by \_\_\_\_\_ (name and title). The SWPPP will be updated by the Owner and/or Site Manager to reflect any and all significant changes in site conditions, selection of BMPs, the presence of any unlisted potential pollutants on site, or changes in the Site Manager, contractor, subcontractors, or other key information. Updates and amendments will be made in writing within 7 days and will be appended to the original BMP Plan and available for review.

*Stormwater Pollution Prevention Plan Certification*

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

I certify under penalty of law that I understand the terms and conditions of the general KPDES permit that authorizes the storm water discharges associated with the construction site activity identified as part of this certification.

*Subcontractor Certification*

The subcontractors below certify under penalty of law that they understand the terms and conditions of the general KPDES permit that authorizes the storm water discharges associated with the construction site activity identified as part of this certification.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

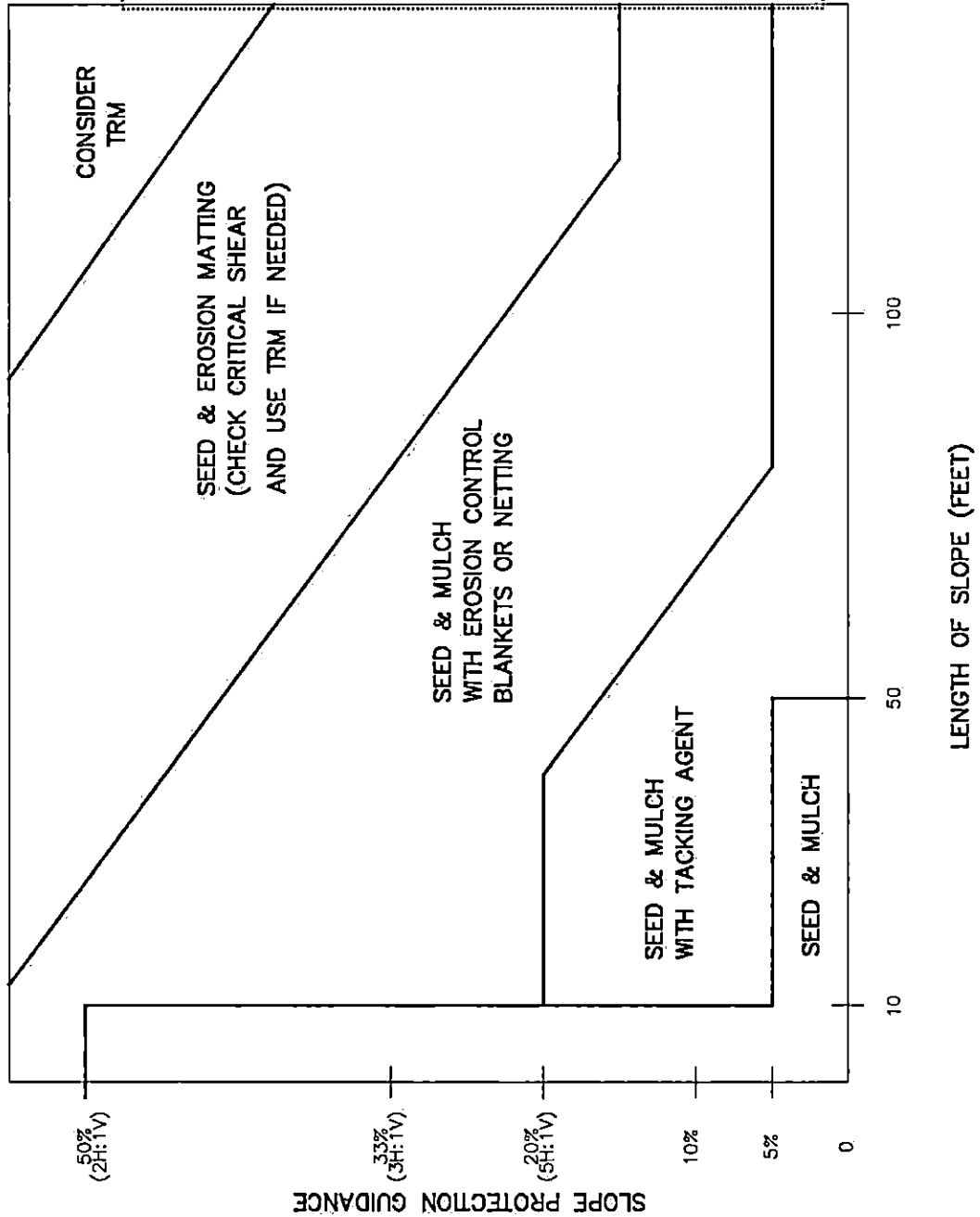


# STORMWATER MANUAL

**FIGURE 11-1**  
SLOPE PROTECTION GUIDANCE

(OCTOBER 1, 2016)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



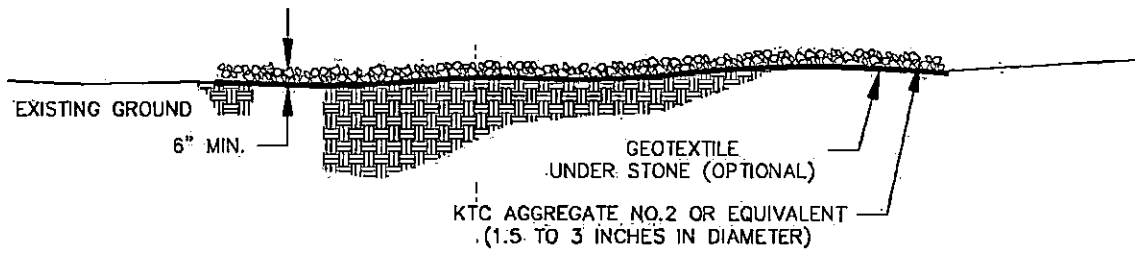


# STORMWATER MANUAL

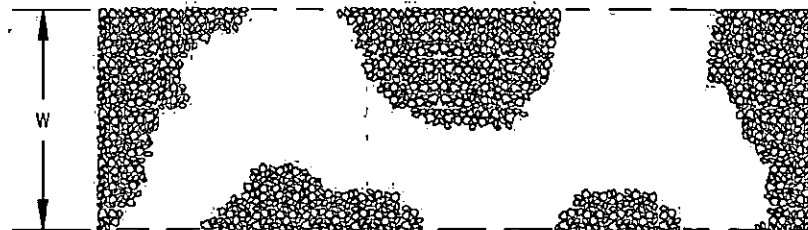
## FIGURE 11-2 ROAD/PARKING STABILIZATION

(OCTOBER 1, 2016)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



### CROSS SECTION



### PLAN VIEW

W = 14' MIN. FOR ONE WAY TRAFFIC  
20' MIN. FOR TWO WAY TRAFFIC

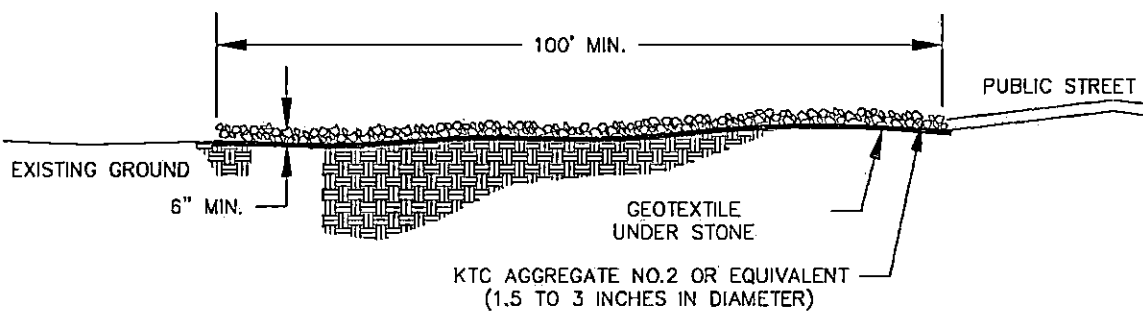


# STORMWATER MANUAL

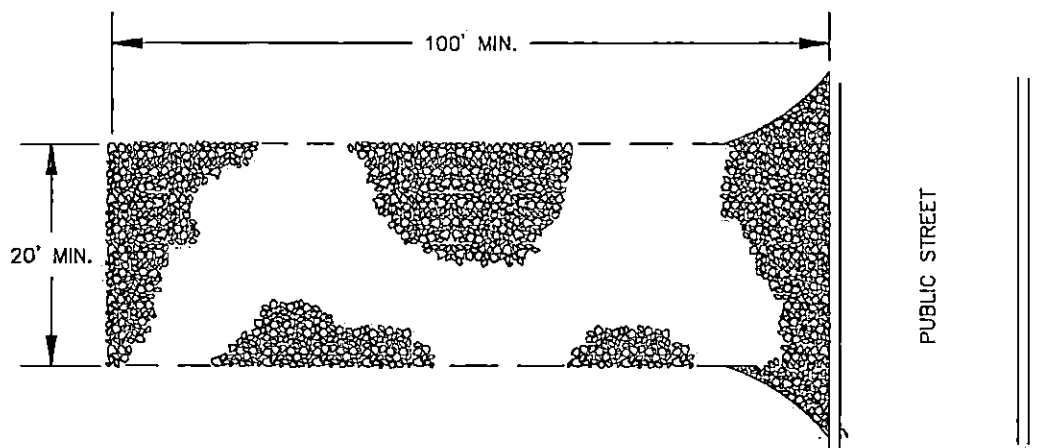
**FIGURE 11-3**  
CONSTRUCTION ENTRANCE

(OCTOBER 1, 2016)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



## CROSS SECTION



## PLAN VIEW





# STORMWATER MANUAL

## FIGURE 11-4 CONSTRUCTION ENTRANCE NOTES AND SPECIFICATIONS (OCTOBER 1, 2016)

### SPECIFICATIONS FOR GEOTEXTILE FABRIC

GRAB TENSILE STRENGTH	220 LBS. (MIN.) (ASTM D1682)
ELONGATION FAILURE	60% (MIN.) (ASTM D1682)
MULLEN BURST STRENGTH	430 LBS. (MIN.) (ASTM D3768)
PUNCTURE STRENGTH	125 LBS. (MIN.) (ASTM D751) (MODIFIED)
EQUIVALENT OPENING	SIZE 40-80 (US STD SIEVE) (CW-02215)

#### NOTES

1. A STABILIZED ENTRANCE PAD OF CRUSHED STONE SHALL BE LOCATED WHERE TRAFFIC WILL ENTER OR LEAVE THE CONSTRUCTION SITE ONTO A PUBLIC STREET.
2. SOIL STABILIZATION FABRIC SHALL BE USED AS A BASE FOR THE CONSTRUCTION ENTRANCE.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS WARRANT AND REPAIR OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
4. ANY SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC STREETS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
5. WHEN APPROPRIATE, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET; WHEN WASHING IS REQUIRED, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN.

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

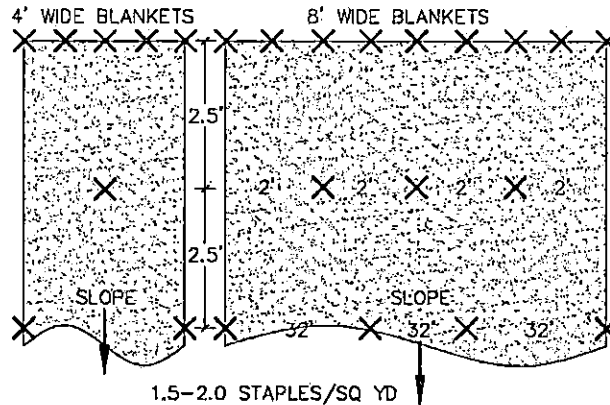


# STORMWATER MANUAL

**FIGURE 11-5**  
**STAPLE PATTERN FOR STRAW  
 OR EXCELSIOR MATS**  
 (OCTOBER 1, 2016)

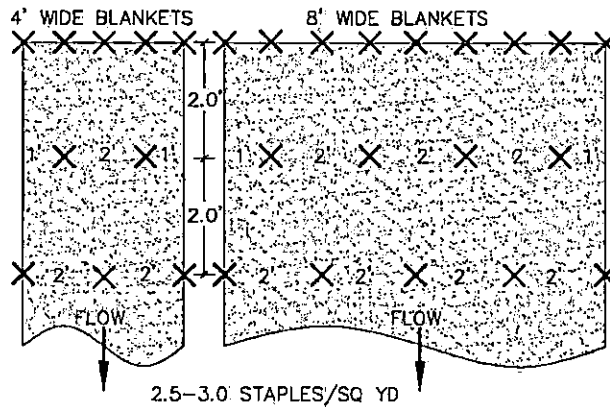
### SLOPES UP TO 1.5H:1V

- INSTALL BLANKET VERTICALLY OR HORIZONTALLY
  - USE 12" STAPLE SPACING ON STARTER ROW.
- COHESIVE SOILS:
- NO OVERLAP REQUIRED ON SIDE SEAMS
  - USE 6" STAPLE LENGTH
- NON-COHESIVE SOILS:
- USE 6" SIDE SEAM OVERLAP
  - USE 8" STAPLE LENGTH
  - USE 6" ANCHOR TRENCH AT TOP OF SLOPE



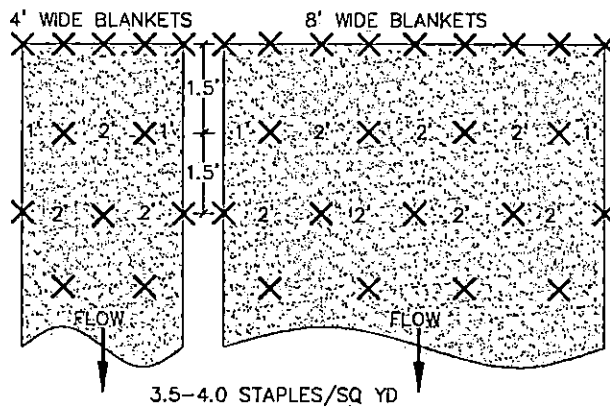
### CHANNELS IN COHESIVE SOILS

- USE 6" SIDE SEAM OVERLAP
  - USE 6" STAPLE LENGTH
  - USE 6" TRANSVERSE ANCHOR TRENCH AT 100-FT. INTERVALS
- USE 12" STAPLE SPACING ON STARTER ROW.
  - UPSTREAM BLANKET SHOULD OVERLAP DOWNSTREAM BLANKET A DISTANCE OF 12" IN A "SHINGLE" FASHION AND BURY THE FINISHED TOE AT LEAST 6".



### CHANNELS IN NON-COHESIVE SOILS

- USE 6" SIDE SEAM OVERLAP
  - USE 8" STAPLE LENGTH
  - USE 6" TRANSVERSE ANCHOR TRENCH AT 50-FT. INTERVALS
- USE 12" STAPLE SPACING ON STARTER ROW.
  - UPSTREAM BLANKET SHOULD OVERLAP DOWNSTREAM BLANKET A DISTANCE OF 12" IN A "SHINGLE" FASHION AND BURY THE FINISHED TOE AT LEAST 6".



NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

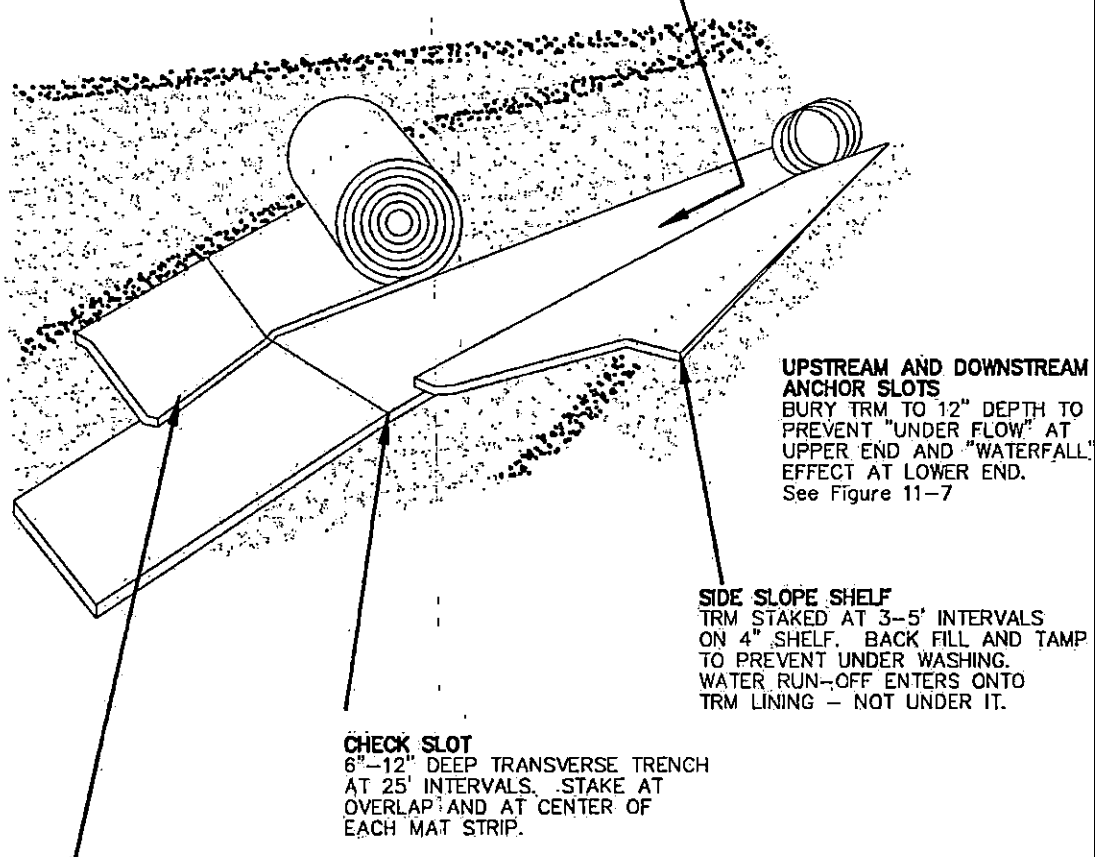


# STORMWATER MANUAL

## FIGURE 11-6 PLACEMENT OF TRM IN CHANNEL

(OCTOBER 1, 2016)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



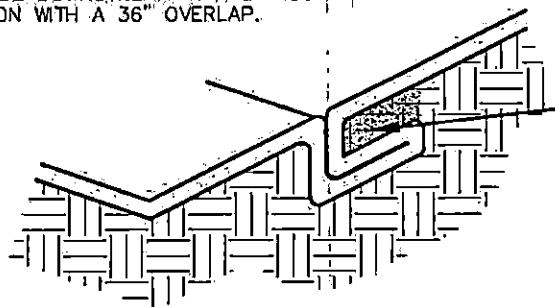
**UPSTREAM AND DOWNSTREAM ANCHOR SLOTS**  
BURY TRM TO 12" DEPTH TO PREVENT "UNDER FLOW" AT UPPER END AND "WATERFALL" EFFECT AT LOWER END.  
See Figure 11-7

**SIDE SLOPE SHELF**  
TRM STAKED AT 3-5' INTERVALS ON 4" SHELF. BACK FILL AND TAMP TO PREVENT UNDER WASHING. WATER RUN-OFF ENTERS ONTO TRM LINING - NOT UNDER IT.

**CHECK SLOT**  
6"-12" DEEP TRANSVERSE TRENCH AT 25' INTERVALS. STAKE AT OVERLAP AND AT CENTER OF EACH MAT STRIP.

**OVERLAP IN A SHINGLE FASHION**  
4" OVERLAP STAKED AT 3-5' INTERVALS

WHEN ROLL TERMINATES, IT IS STAKED OVER THE ROLL WHICH EXTENDS DOWNSTREAM IN A SHINGLE FASHION WITH A 36" OVERLAP.



**CHECK SLOT DETAIL**  
STAKE AND BACK FILL IN CHECK SLOT BEFORE CONTINUING TO PLACE UPSLOPE

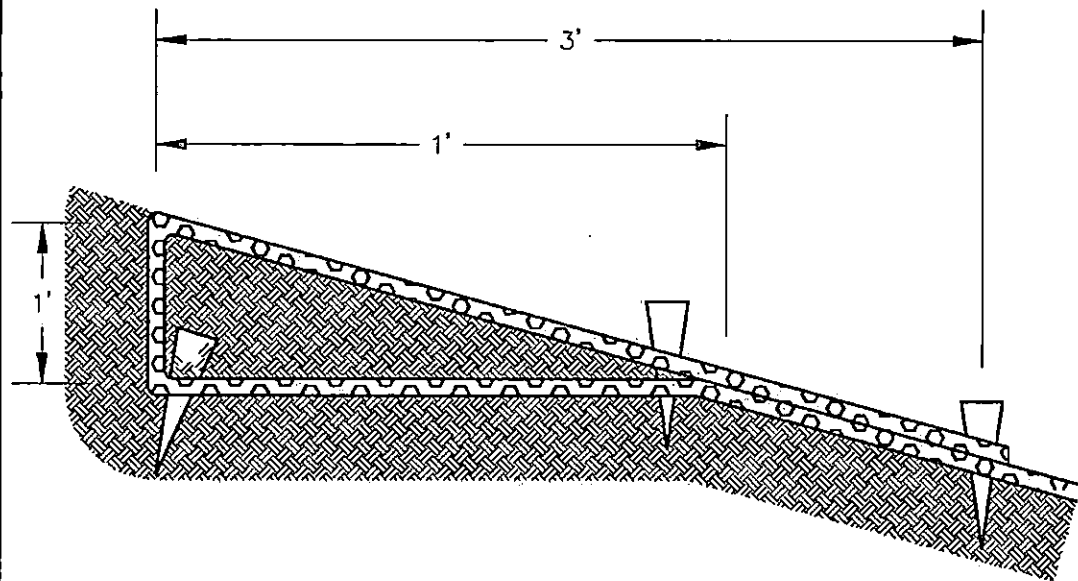


# STORMWATER MANUAL

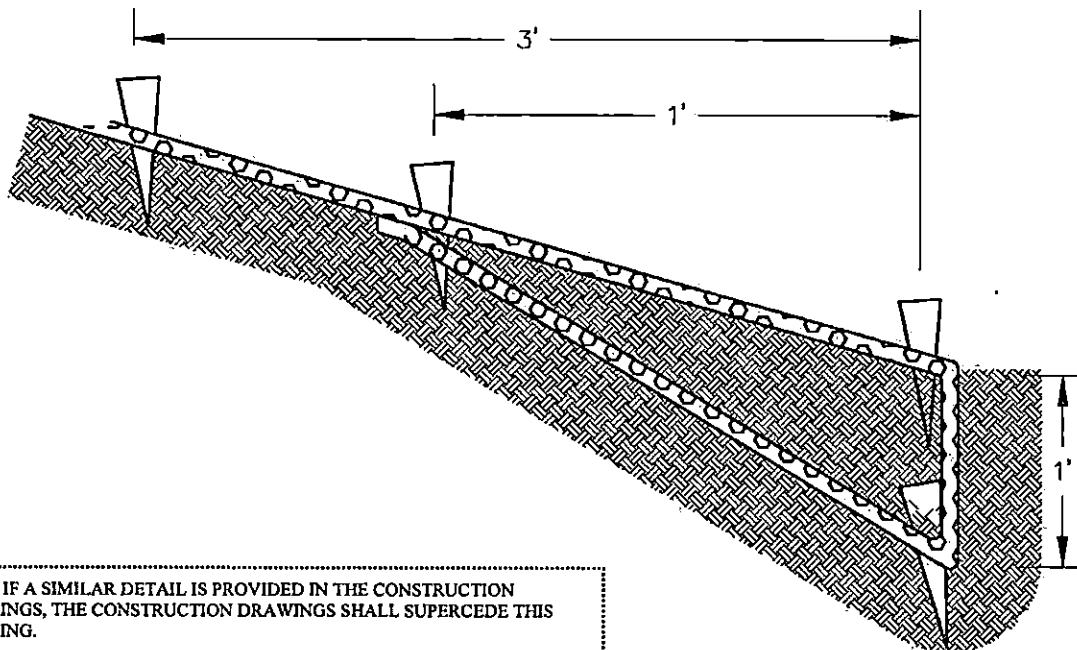
**FIGURE 11-7**  
ANCHOR SLOT DETAILS FOR TRM

(OCTOBER 1, 2016)

UPSTREAM ANCHOR SLOT DETAIL



DOWNSTREAM ANCHOR SLOT DETAIL

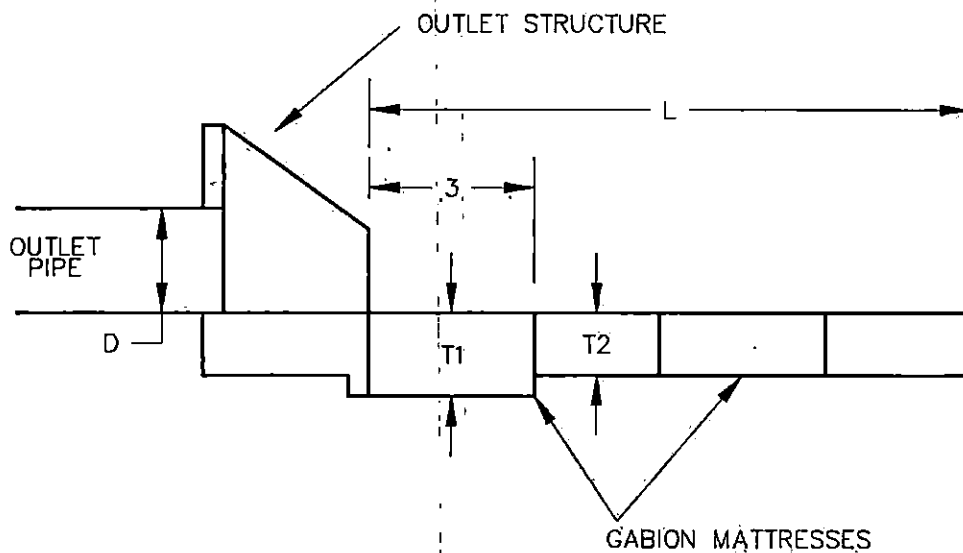


NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



# STORMWATER MANUAL

**FIGURE 11-8**  
CROSS SECTION AT  
GABION MATTRESS OUTLET PROTECTION  
(OCTOBER 1, 2016)



- T1 = THICKNESS OF FIRST 3 FEET OF GABION MATTRESS TO MATCH DEPTH OF OUTLET STRUCTURE FOUNDATION
- T2 = THICKNESS OF REMAINING GABION MATTRESS, 12 INCHES MINIMUM AND 18 INCHES MINIMUM FOR CALCULATED OUTLET VELOCITIES OF 10 TO 15 FEET PER SECOND.

FOR  $D < 36$  INCHES,  $L = 12$  FEET

FOR  $D > 36$  INCHES,  $L = 4 \times D$  FEET

$D =$  HEIGHT OR WIDTH OF OUTLET, WHICHEVER IS GREATER

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

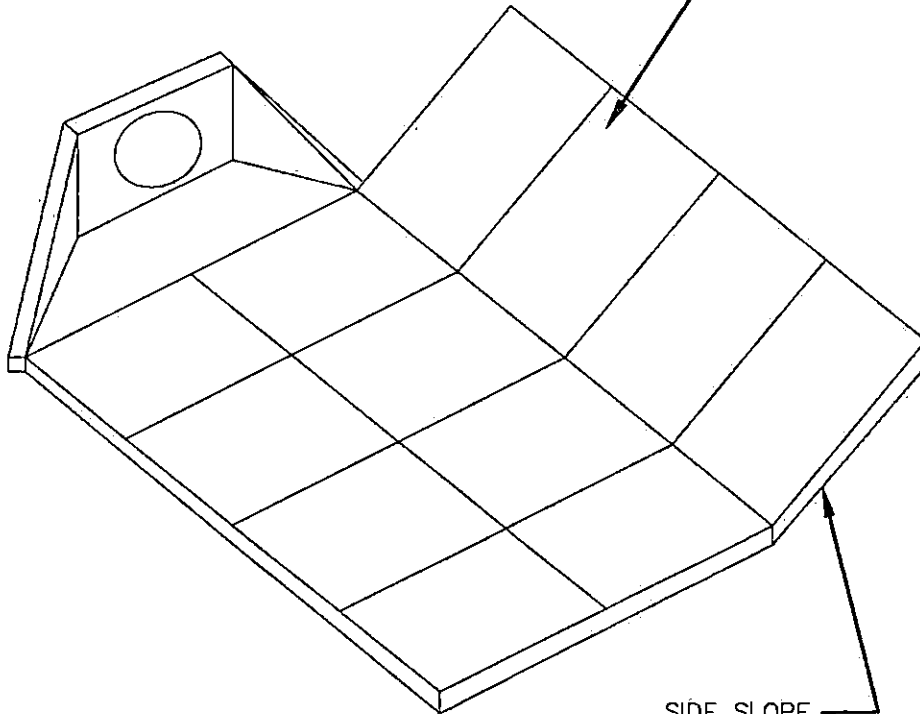


# STORMWATER MANUAL

**FIGURE 11-9**  
GABION MATTRESS AT OUTLET  
INTO WELL-DEFINED CHANNEL

(OCTOBER 1, 2016)

EXTEND GABION MATTRESS UP SIDE SLOPE  
OF CHANNEL TO TOP OF BANK OR 1' HIGHER  
THAN MAXIMUM TAILWATER DEPTH,  
WHICHEVER IS LESS



SIDE SLOPE  
SHALL NOT EXCEED  
2H:1V

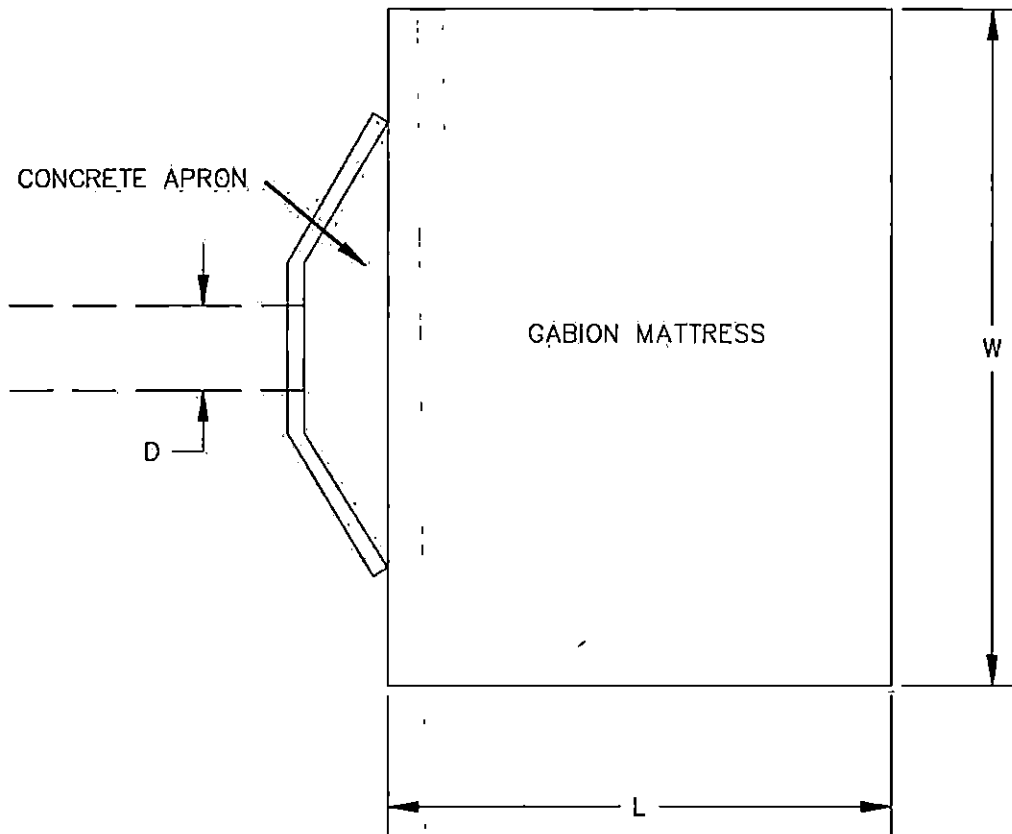
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE  
CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



# STORMWATER MANUAL

**FIGURE 11-10**  
PLAN VIEW OF GABION MATTRESS  
AT OUTLET INTO FLAT AREA

(OCTOBER 1, 2016)



D = HEIGHT OR WIDTH OF OUTLET, WHICHEVER IS GREATER

FOR  $D \leq 36$  INCHES:

$L = 12$  FEET MINIMUM

$W = (18 + D)$  FEET MINIMUM

FOR  $D > 36$  INCHES:

$L = 4 \times D$  FEET MINIMUM

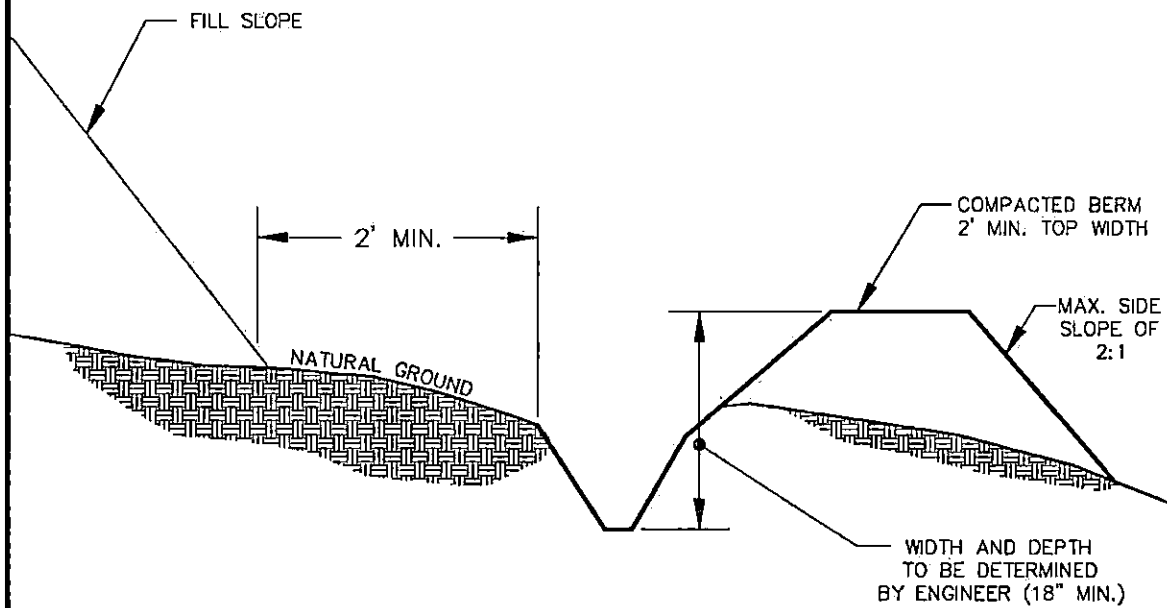
$W = (2 \cdot L + D)$  FEET MINIMUM

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



# STORMWATER MANUAL

**FIGURE 11-12**  
TEMPORARY DIVERSION DITCH  
(OCTOBER 1, 2016)



NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



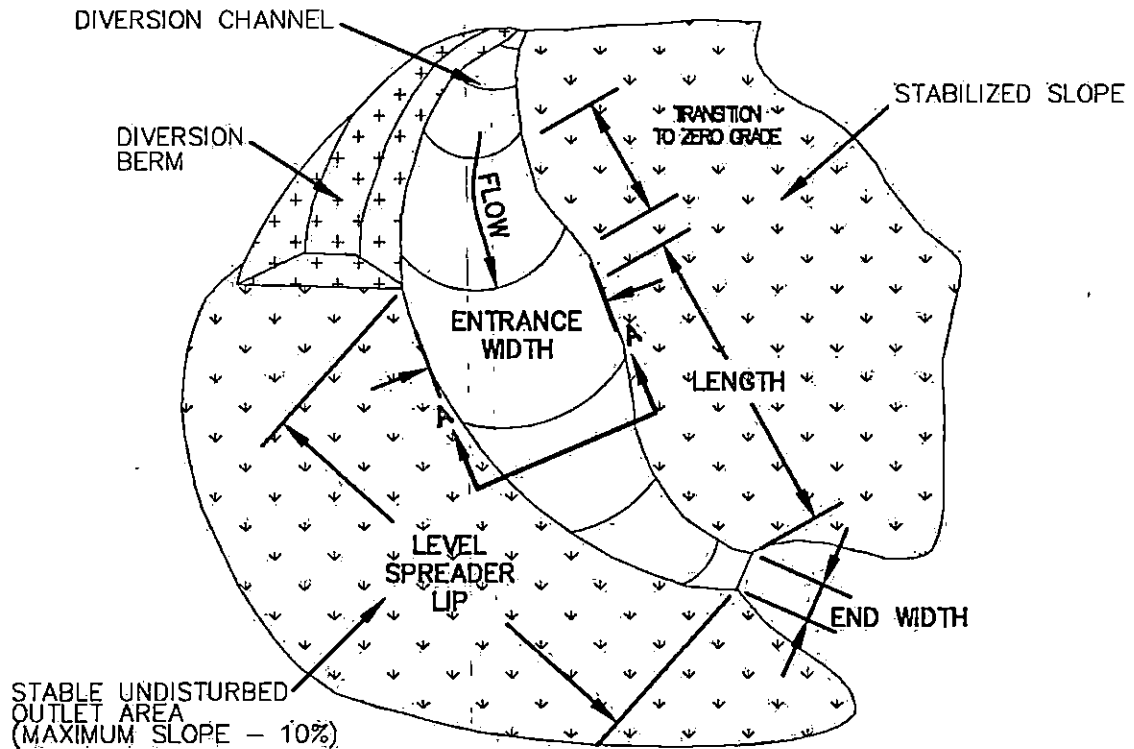


# STORMWATER MANUAL

**FIGURE 11-13**

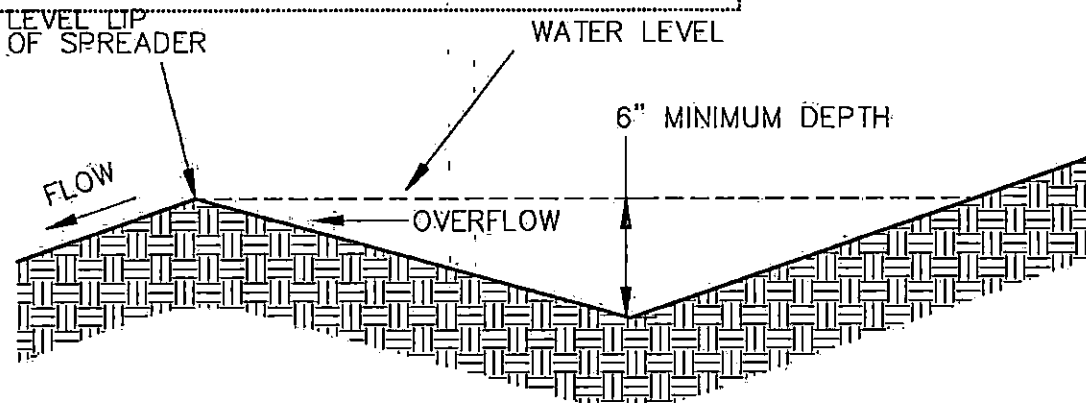
LEVEL SPREADER

(OCTOBER 1, 2016)



PERSPECTIVE

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

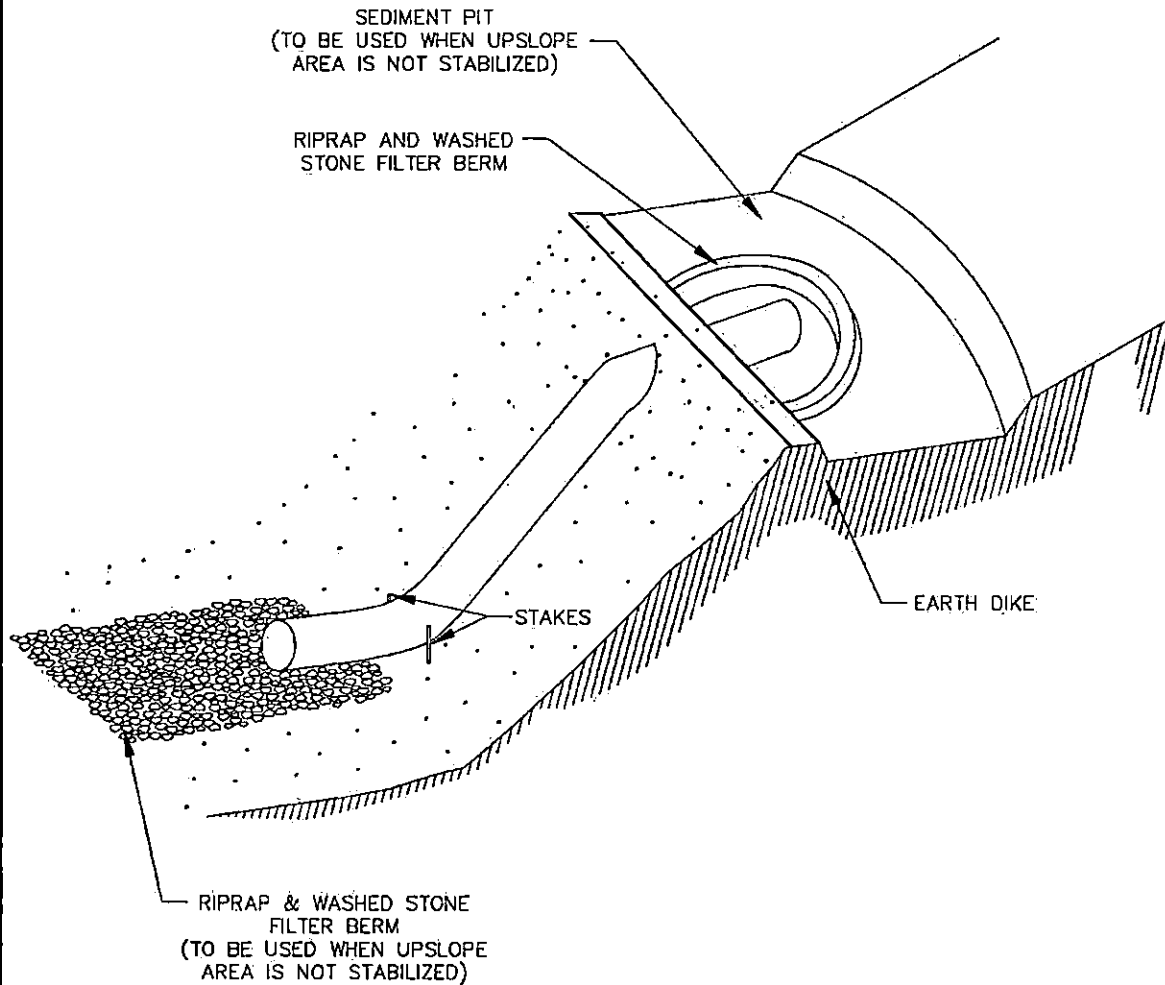


SECTION A-A



# STORMWATER MANUAL

**FIGURE 11-14**  
**FLEXIBLE PIPE SLOPE DRAIN**  
(OCTOBER 1, 2016)

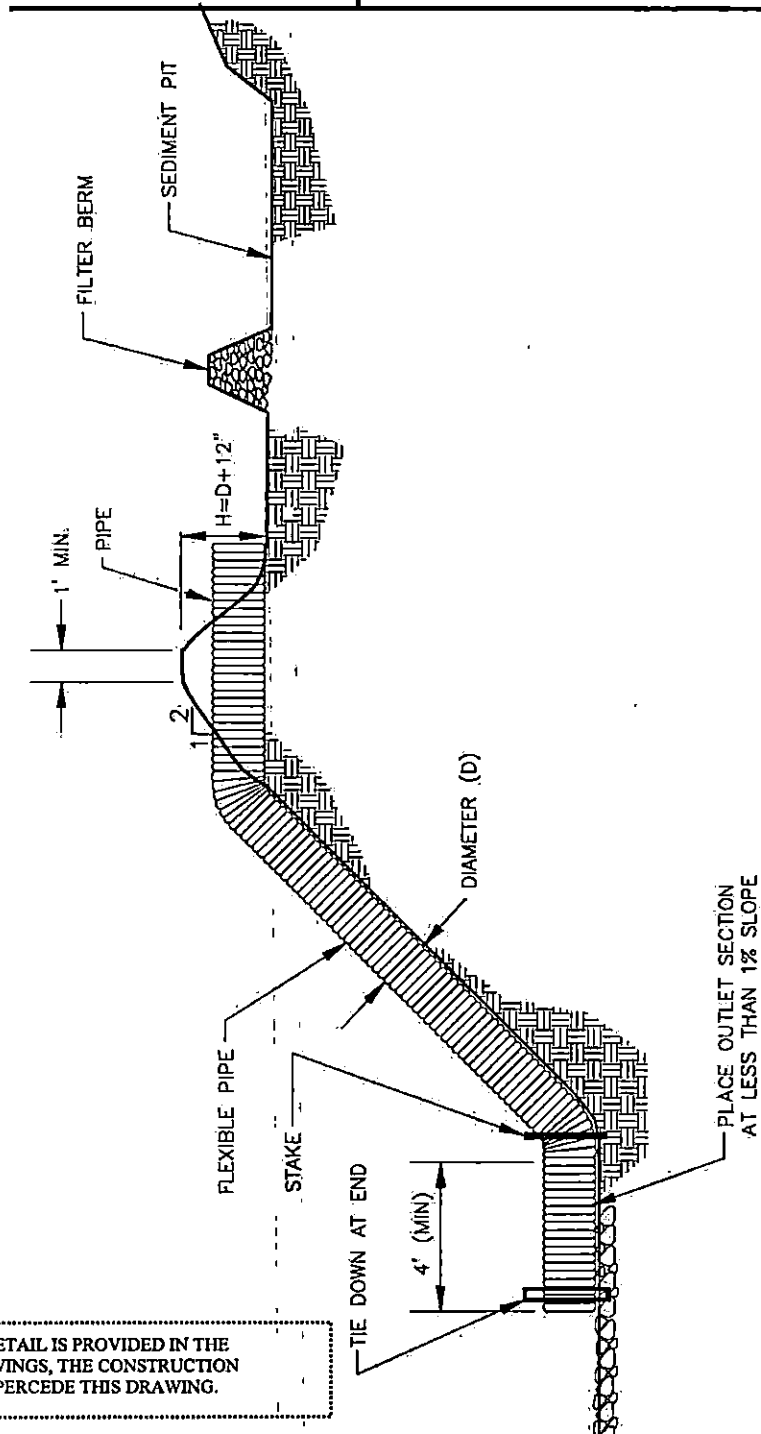


NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE  
CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



# STORMWATER MANUAL

**FIGURE 11-15**  
SLOPE DRAIN - PROFILE  
(OCTOBER 1, 2016)



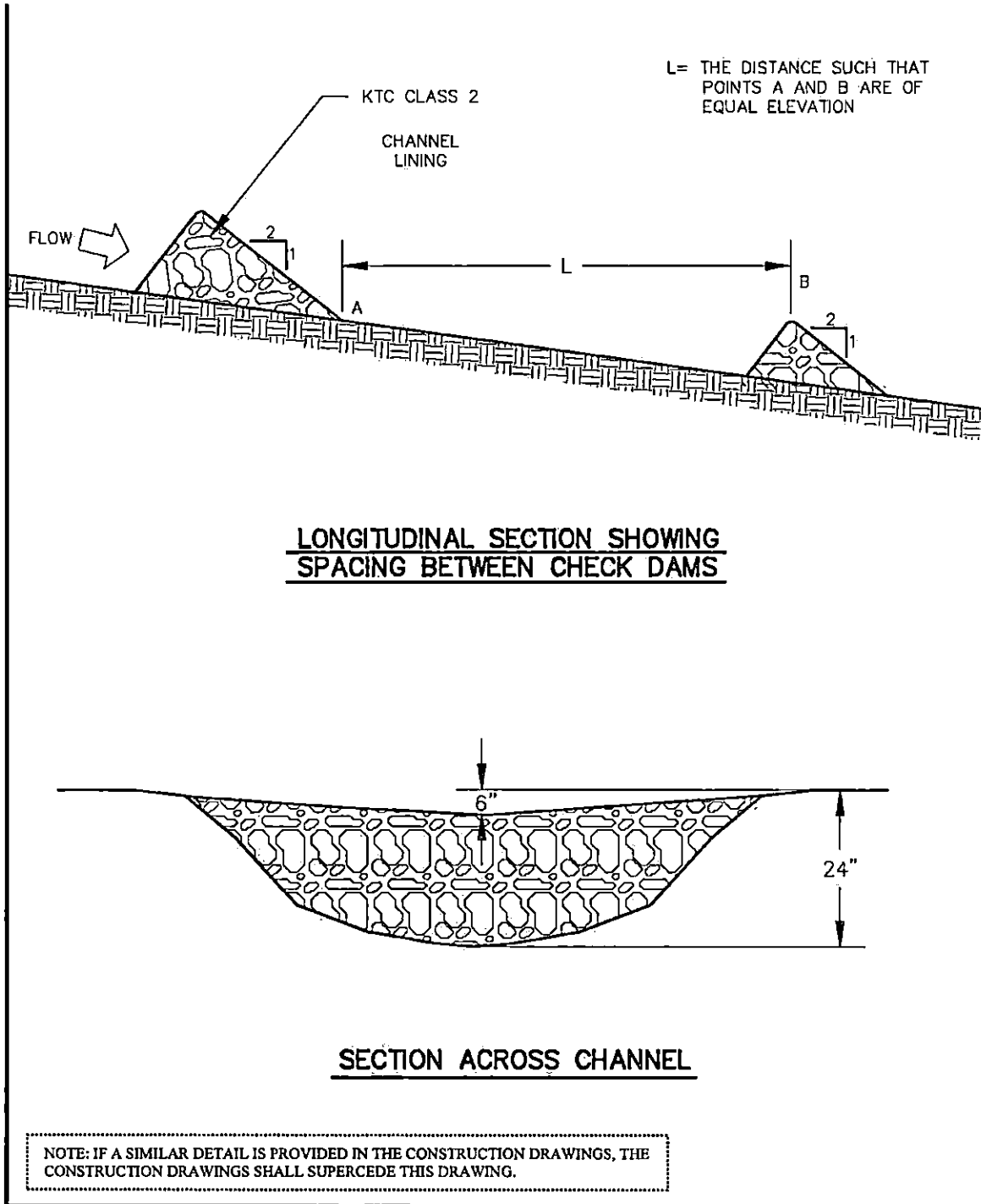


# STORMWATER MANUAL

**FIGURE 11-16**

ROCK CHECK DAM

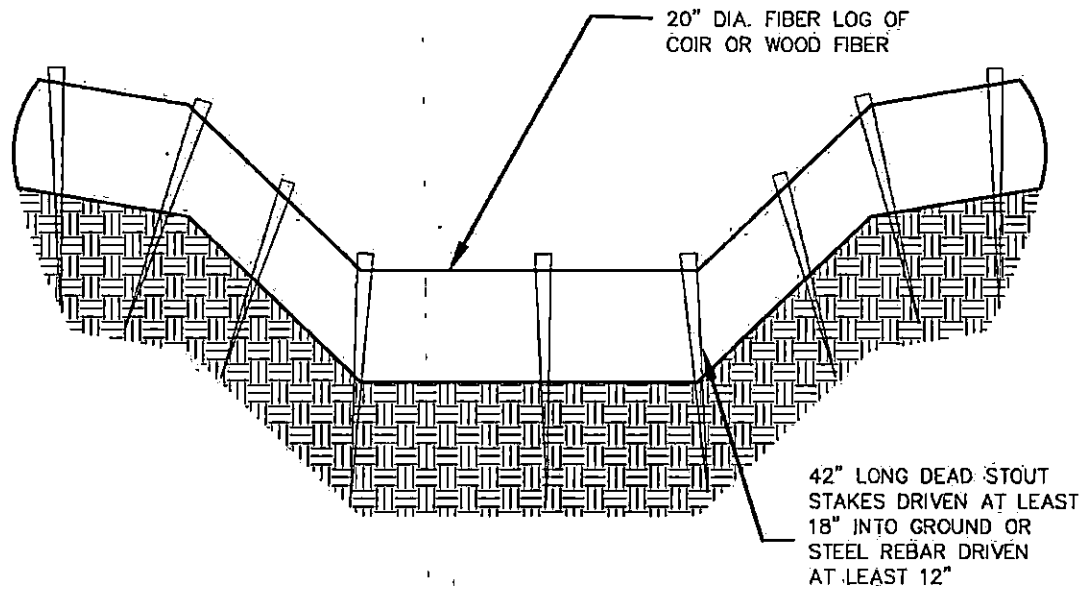
(OCTOBER 1, 2016)





# STORMWATER MANUAL

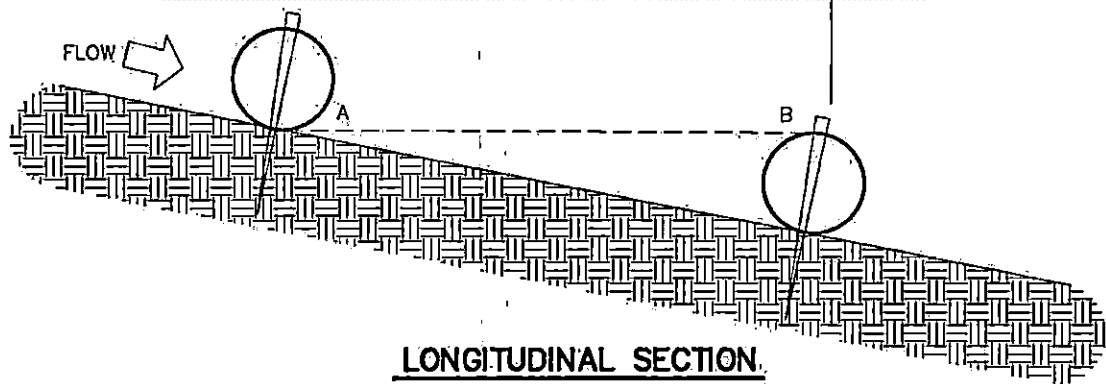
**FIGURE 11-17**  
**FIBER LOG CHECK DAM**  
(OCTOBER 1, 2016)



**SECTION ACROSS CHANNEL**

STAKES SHALL BE SPACED NO FURTHER THAN 24" AND SHALL BE DRIVEN AT EACH SIGNIFICANT SLOPE BREAK AND WITHIN 6" OF EACH END.

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERSEDE THIS DRAWING.



**LONGITUDINAL SECTION**

L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

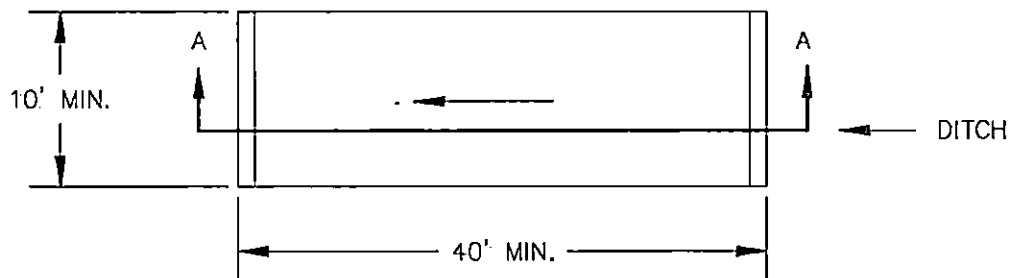


# STORMWATER MANUAL

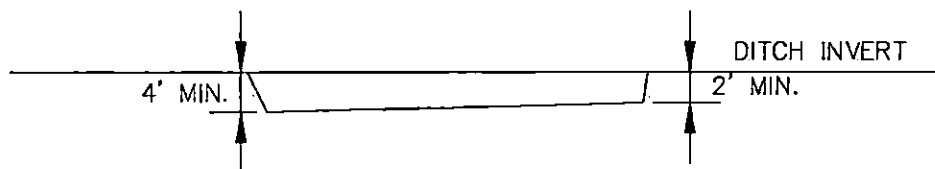
**FIGURE 11-18**

SEDIMENT TRAP

(OCTOBER 1, 2016)



PLAN VIEW



SECTION A-A

NOTES:

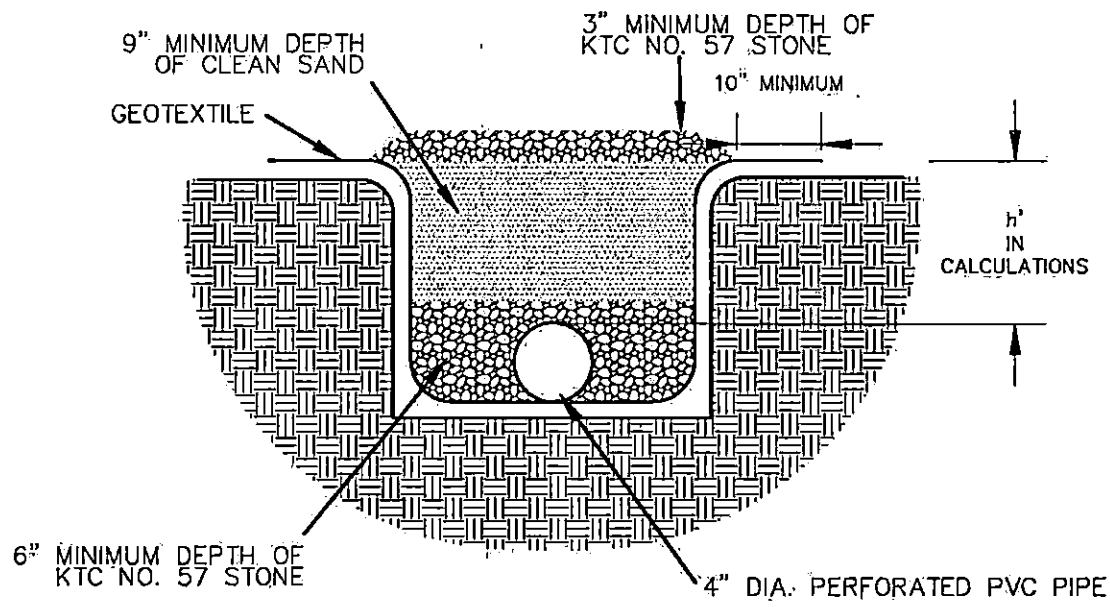
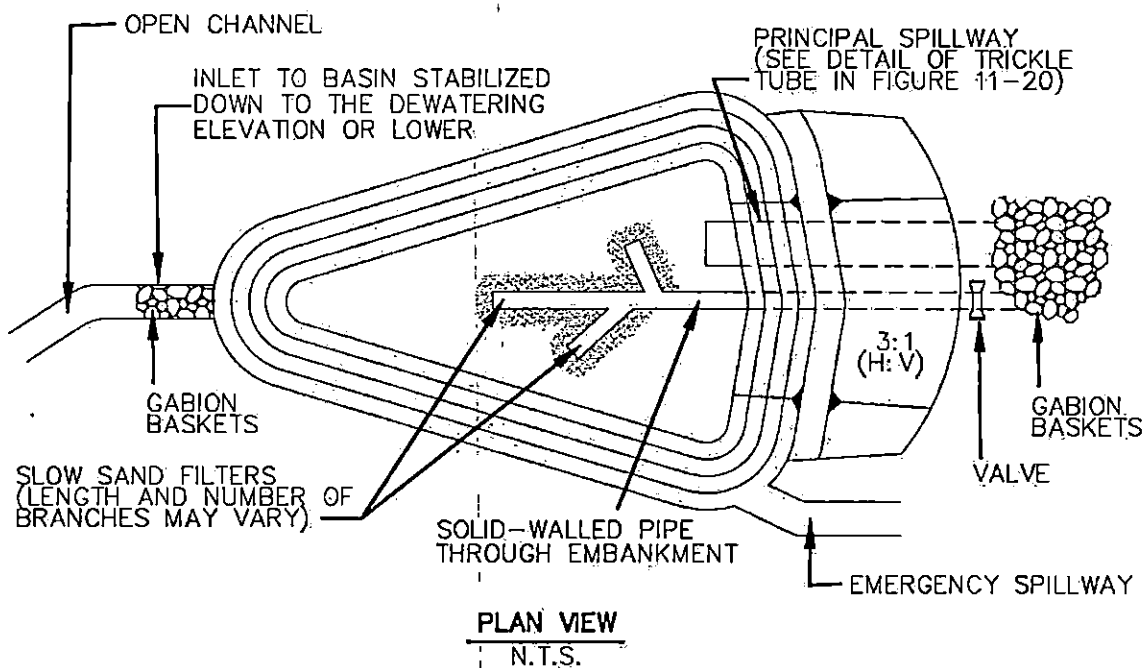
- 1) THE SIZE, SHAPE AND LOCATION OF TRAP MAY BE ADJUSTED FROM THAT SHOWN IN THE CONSTRUCTION PLANS, AS DIRECTED BY THE ENGINEER.
- 2) THE SEDIMENT TRAP MAY BE CONSTRUCTED AS DIRECTED BY THE ENGINEER AS LONG AS THE AREA AND DEPTH IS AT LEAST AS THAT INDICATED ON THE PLANS.
- 3) SEDIMENT TRAP SHALL BE CONSTRUCTED BY EXCAVATING THE BASIN IN NATURAL OR EXCAVATED CHANNELS. SEDIMENT DEPOSITS IN TRAP SHALL BE REMOVED EACH TIME THE TRAP IS APPROXIMATELY 50 PERCENT FILLED. WHEN THEIR USEFULNESS HAS ENDED, THE TRAPS SHALL BE REMOVED, SURPLUS MATERIAL DISPOSED OF AND THE ENTIRE DISTURBED AREA SHALL BE SEEDED AND PROTECTED, OR SODDED, AS DIRECTED. SEDIMENT TRAPS MAY REMAIN IN PLACE UPON COMPLETION OF THE PROJECT ONLY WHEN PERMITTED BY THE ENGINEER OR THE PLANS.

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERSEDE THIS DRAWING.



# STORMWATER MANUAL

**FIGURE 11-19**  
**SEDIMENT POND WITH SAND FILTER OUTLET**  
 (OCTOBER 1, 2016)

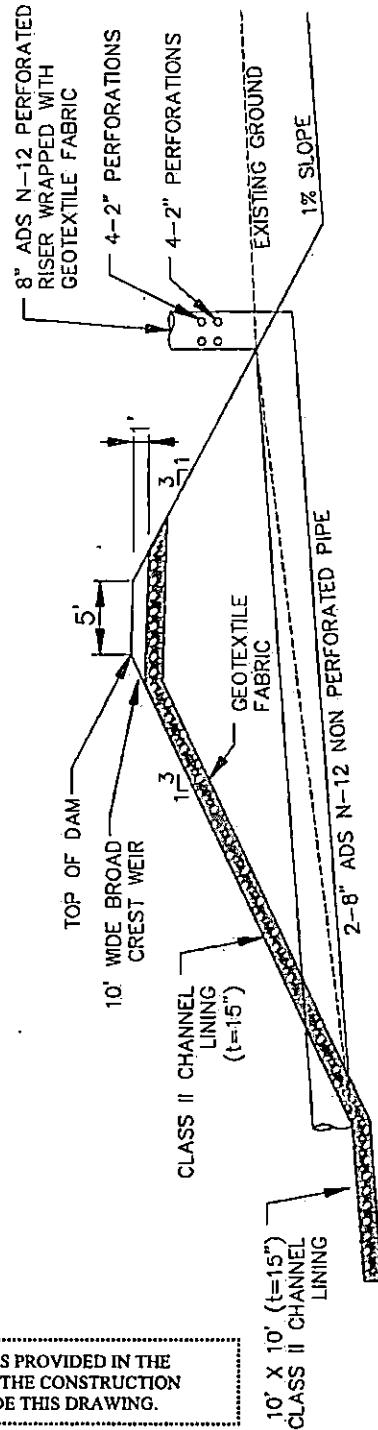


NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERSEDE THIS DRAWING.



# STORMWATER MANUAL

**FIGURE 11-20**  
**TEMPORARY SEDIMENTATION BASIN**  
**OUTLET STRUCTURE / SPILLWAY**  
**DETAIL**  
**(OCTOBER 1, 2016)**



TEMPORARY SEDIMENTATION BASIN  
 OUTLET STRUCTURE / SPILLWAY  
 N.T.S.

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERSEDE THIS DRAWING.

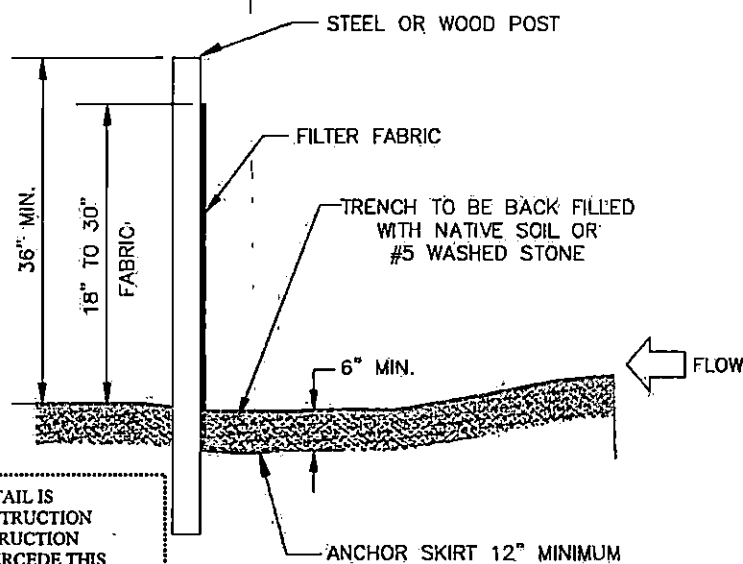
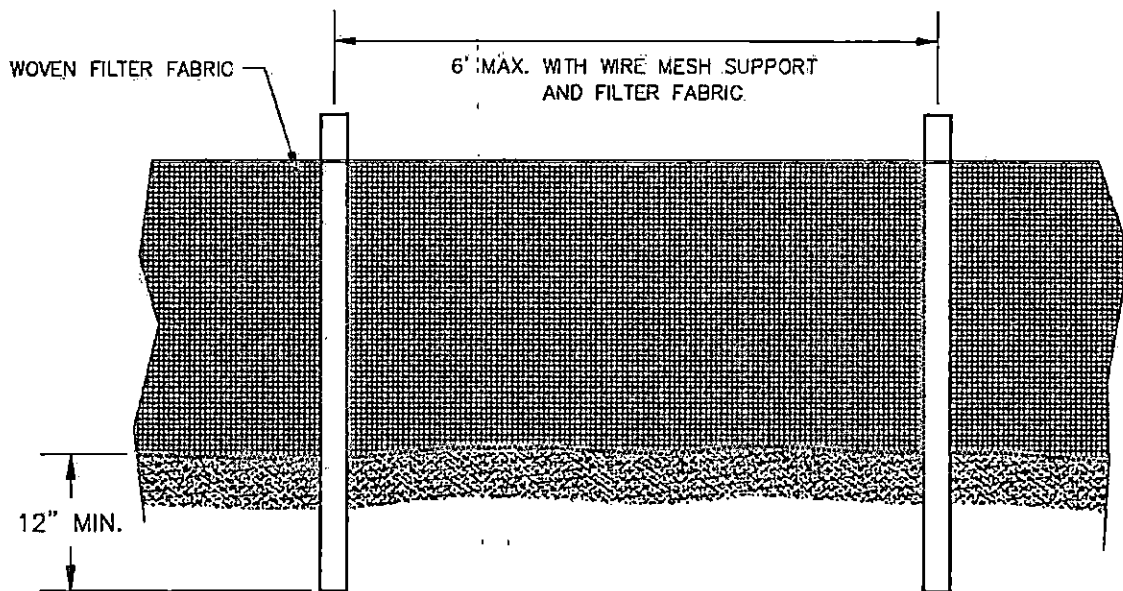




# STORMWATER MANUAL

**FIGURE 11-21**  
TEMPORARY SILT FENCE

(OCTOBER 1, 2016)



NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



## STORMWATER MANUAL

**FIGURE 11-22**  
TEMPORARY SILT FENCE  
GENERAL NOTES  
(OCTOBER 1, 2016)

### GENERAL NOTES

1. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL AND CUT TO THE LENGTH OF THE BARRIER. WHEN JOINTS CANNOT BE AVOIDED, FILTER FABRIC SHALL BE SPLICED TOGETHER ONLY AT A POST WITH 3 FOOT MIN. OVERLAP, AND SECURELY SEALED.
2. POSTS SHALL BE SPACED AT 6 FOOT INTERVALS IN AREAS OF RAPID RUNOFF.
3. POSTS SHALL BE AT LEAST 5 FEET IN LENGTH.
4. STEEL POSTS SHALL HAVE PROJECTIONS FOR FASTENING WIRE AND FABRIC.
5. WOOD POSTS SHALL BE 2 INCHES BY 2 INCHES OR EQUIVALENT. STEEL POSTS SHALL BE 1.33 LBS PER LINEAR FOOT.
6. A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH IN LENGTH, WIRE TIES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. WASHED STONE SHALL BE USED TO BURY SKIRT WHEN SILT FENCE IS USED ADJACENT TO A CHANNEL, CREEK, OR POND.
8. TURN SILT FENCE UP SLOPE AT ENDS.

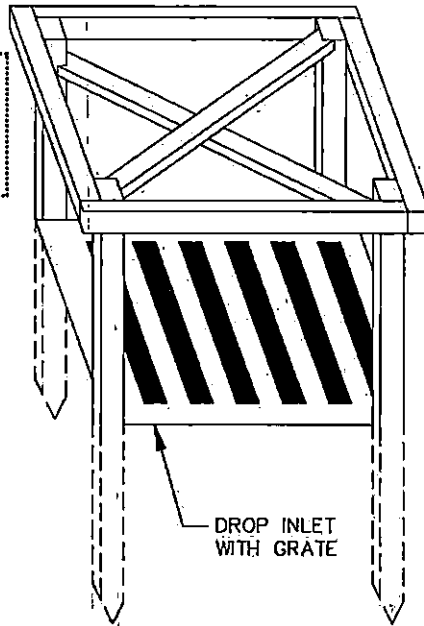
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



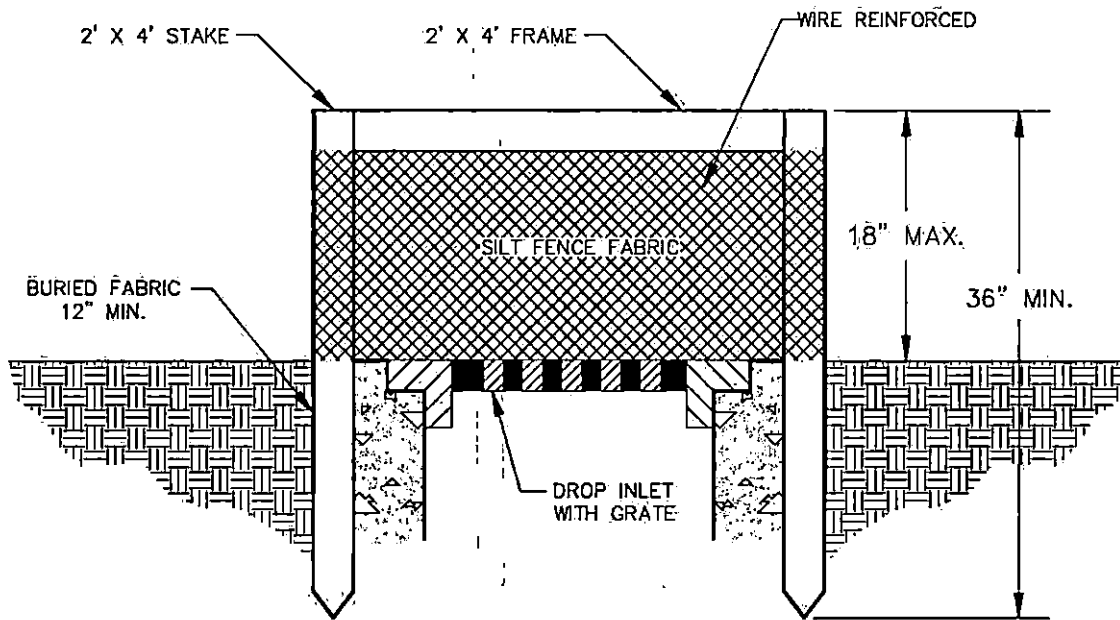
# STORMWATER MANUAL

**FIGURE 11-23**  
**DROP INLET PROTECTION**  
**USING SILT FENCE**  
**(OCTOBER 1, 2016)**

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



**ISOMETRIC VIEW OF  
2 X 4 WOOD FRAME**



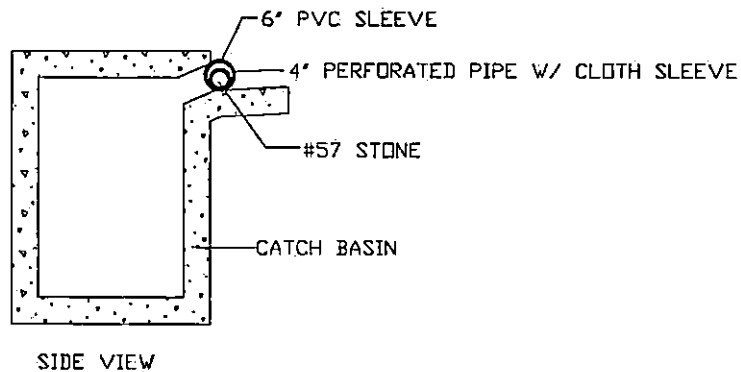
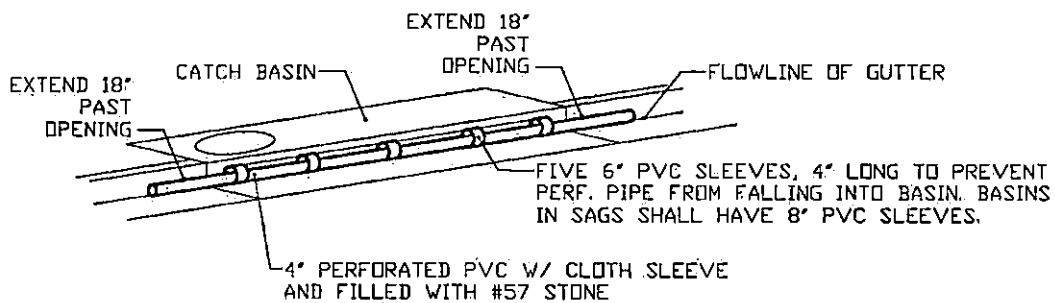
**CROSS SECTION VIEW**



# STORMWATER MANUAL

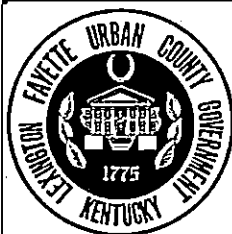
**FIGURE 11-24**  
CATCH BASIN INLET PROTECTION DETAIL

(OCTOBER 1, 2016)



CATCH BASIN INLET PROTECTION DETAIL  
N.T.S.

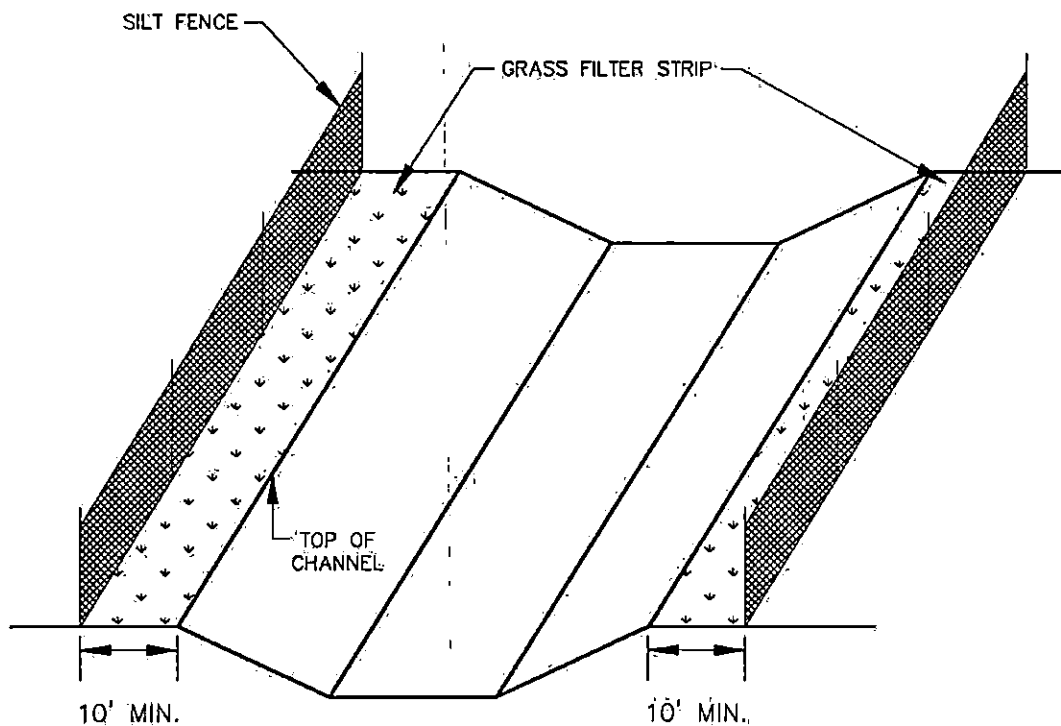
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



# STORMWATER MANUAL

**FIGURE 11-25**  
FILTER STRIP FOR  
CONSTRUCTED CHANNEL

(OCTOBER 1, 2016)

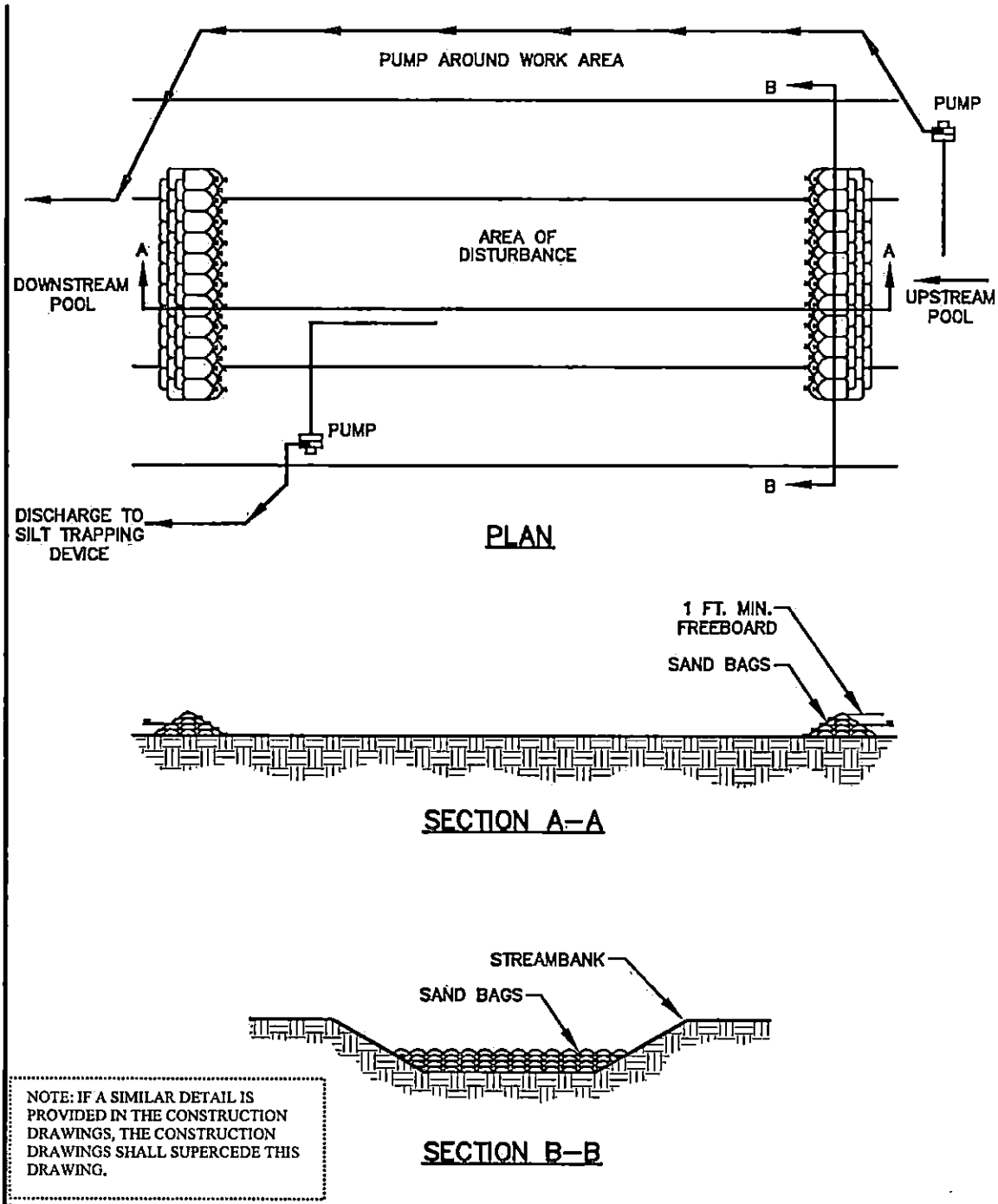


NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



# STORMWATER MANUAL

**FIGURE 11-26**  
PUMP-AROUND FLOW DIVERSION  
(OCTOBER 1, 2016)



END OF SECTION

SECTION 02500

SURFACE RESTORATION

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Provide all labor, equipment, and materials necessary for final grading, topsoil placement, and miscellaneous site work not included under other Sections but required to complete the work as shown on the Drawings and specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02200 - Earthwork
- B. Section 02372 - Erosion and Sedimentation Control
- C. Section 02910 - Final Grading and Landscaping

PART 2 -- MATERIALS

2.01 TOPSOIL

- A. Topsoil shall meet the requirements of Section 02200 -- Earthwork.

PART 3 -- EXECUTION

3.01 FINAL GRADING

- A. Following approval of rough grading the subgrade shall be prepared as follows:
  - 1. For riprap, bare soil 24 inches below finish grade or as directed by Engineer.
  - 2. For topsoil, scarify 2-inches deep at 4 inches below finish grade.

3.02 TOPSOIL PLACEMENT

- A. Topsoil shall be placed over all areas disturbed during construction under any contract except those areas which will be paved, graveled or rip rapped.
- B. Topsoil shall be spread in place for lawn and road shoulder seed areas at a 4-inch consolidated depth and at a sufficient quantity for plant beds and backfill for shrubs and trees.
- C. Topsoil shall not be placed in a frozen or muddy condition.
- D. Final surface shall be hand or mechanically raked to an even finished surface to finish grade as shown on Drawings.

- E. All stones and roots over 4-inches and rubbish and other deleterious materials shall be removed and disposed of.

- END OF SECTION -



SECTION 02910

FINAL GRADING AND LANDSCAPING

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Furnish all labor, equipment, and materials necessary for final grading, topsoiling, seeding, and miscellaneous site work not included under other Sections, but required to complete the work as shown on the Drawings and specified herein. Under this Section, all areas of the project site disturbed by excavation, materials storage, temporary roads, etc., shall be reseeded as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02371 - Erosion and Sedimentation Control.
- B. Section 02500 - Surface Restoration.

1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals.
  - 1. Product Data
  - 2. Certification of all materials
  - 3. Three (3) copies of composition and germination certification and of test results for grass seed.

PART 2 -- PRODUCTS

2.01 CONTRACTOR'S RESPONSIBILITIES

- A. Furnish and submit certification for the materials used as specified in the General Conditions, Division 1 and Division 2.

2.02 TOPSOIL

- A. Upon completion and approval of the rough grading, the Contractor shall place the topsoil over all areas disturbed during construction under any contract except those areas which will be paved, graveled or rip rapped. Topsoil shall not be placed in a frozen or muddy condition and shall contain no toxic materials harmful to grass growth. Topsoil shall be as defined under Section 02200, Earthwork.

2.03 WATER

- A. Water shall be furnished to the Contractor by the Owner from existing facilities as directed by the Engineer.

- B. The Contractor shall furnish all hoses and connections necessary to complete the landscaping work.

2.04 FERTILIZER

- A. Fertilizer shall be a complete commercial fertilizer with components derived from commercial sources. Fertilizer analysis shall be determined from field soil sampling in appropriate number taken by the Contractor and analyzed by the Kentucky of Agriculture or other independent laboratory. Contractor shall furnish fertilizer in accordance with the recommendations of the Kentucky of Agriculture.
- B. One-quarter of the Nitrogen shall be in the form of nitrates, one-quarter in the form of ammonia salts, and one-half in the form of natural organic Nitrogen. Available Phosphoric Acid shall be free from superphosphate, bone, or tankage. Potash shall be Sulphate of Potash. Elements shall conform to the standards of Association of Official Agricultural Chemists.
- C. Fertilizer shall be delivered in standard size bags marked with the weight, analysis of contents, and the name of the manufacturer. Fertilizer shall be stored in weatherproof storage areas and in such a manner that its effectiveness will not be impaired.

2.05 LIME

- A. At least 50% shall pass a No. 200 U.S.S. mesh sieve. At least 90% shall pass a No. 100 U.S.S. mesh sieve and 100% shall pass a No. 10 U.S.S. mesh sieve. Total carbonates shall not be less than 80% or 44.8% Calcium Oxide equivalent. For the purpose of calculation, total carbonates shall be considered as Calcium Carbonate.

2.06 GRASS SEED

- A. The Contractor shall furnish the kinds and amounts of seed to be seeded in all areas disturbed by the construction work. All seed must have been tested within six (6) months immediately preceding the planting of such material on the job.
- B. The inoculant for treating legume seed shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. The quality of the seed shall conform to the following:

Type	Minimum Seed Purity (%)	Minimum Germination (%)	Maximum Weed Seed (%)
Fescue (fungus free)	98	90	1.00
Hybrid Rye	98	85	0.10
Sudan grass	98	85	0.25
Millet	98	85	0.50
Sericea Lespedeza			
Scarified	98	85	0.50
Unscarified	98	85	0.50

- C. Scarified Lespedeza may contain 20% hard seed and unscarified 50% hard seed. Seed containing prohibited noxious weed seed shall not be accepted.

D. Seed mixtures to be used on the project shall be as follows:

P - 150#/acre Kentucky 31 Tall Fescue  
(Add 25#/acre Sudan grass in May. Add 25#/acre hybrid rye during Nov.)

TW - 120#/acre Hybrid Rye and 50#/acre Annual Lespedeza

TS - 40#/acre Pearl or Brown Top Millet or 50#/acre Sudan grass

Note: P - Permanent Seeding  
TW - Temporary Winter Seeding  
TS - Temporary Summer Seeding

E. On cut and fill slopes 2:1 or steeper add 30#/acre of Sericea Lespedeza to the P seed mixture. Sericea Lespedeza seed shall be scarified for spring plantings and unscarified for fall plantings.

2.07 WOOD CELLULOSE FIBER MULCH

A. For use in hydroseeding grass seed in combination with fertilizers and other approved additions, shall consist of especially prepared wood cellulose fibers such as "Conwed", "Mat-Fiber", or equal, and have no growth or germination inhibiting factors, and be dyed green.

B. The wood cellulose fiber shall have the additional characteristic of dispersing rapidly in water to form a homogeneous slurry and remain in such state when agitated in the hydraulic mulching unit, or adequate equal, with the specified materials.

C. When applied, the wood cellulose fiber with additives will form an absorptive mat but not a plant inhibiting membrane, which will allow moisture, natural or mechanical, to percolate into underlying soil.

D. The mulch shall be supplied, compressed in packages containing 50 pounds of material having an equilibrium air dry moisture content at time of manufacture of 12% plus or minus 3%. Wood cellulose fiber mulch shall be stored in a weatherproof storage area and in such a manner that effectiveness will not be impaired.

2.08 STRAW MULCH

A. Straw used for mulch shall be small grain hay. Hay shall be undamaged, air dry, threshed straw, free of undesirable weed seed. Straw mulch is not required for seeded areas treated with a temporary soil stabilizer.

2.09 TEMPORARY SOIL STABILIZER

A. The temporary agent for soil erosion control shall consist of an especially prepared highly concentrated powder which, when mixed with water, forms a thick liquid such as "Enviroseal 2001" by Enviroseal Corporation, "Terra Control" by Quattro Environmental, Inc., or "CHEM-CRETE ECO-110" by International CHEM-CRETE Corporation, and having no growth or germination inhibiting factors. The agent shall be used for hydroseeding grass seed in combination with other approved amendments resulting in a highly viscous slurry which, when sprayed directly on the soil, forms a gelatinous crust.

## 2.10 ROLLED EROSION CONTROL PRODUCTS

- A. The rolled erosion control products (RECPs) shall be as specified in Section 02372 - Erosion and Sedimentation Control.

## 2.11 RIPRAP AND HERBICIDES

- A. Furnish and install sufficient quantity of landscape gravel or riprap to cover over the ground to a minimum 4-inch depth for gravel and 24-inch depth for riprap, unless otherwise noted, or indicated on the Drawings. Also furnish and apply an approved herbicide to the subgrade surface just prior to installing the landscape gravel or riprap.
- B. During placing, the stone shall be graded so that the smaller stones are uniformly distributed through the mass. The Contractor may place the stone by mechanical methods, augmented by hand placing where necessary or ordered by the Engineer. The placed riprap shall form a properly graded, dense, neat layer of stone.
- C. All topsoil and vegetative matter shall be removed from the subgrade surfaces prior to the application of the weed killer (herbicide) and to the placement of landscape gravel or riprap. Apply commercial-type herbicide as preemergence control of miscellaneous grasses and broadleaf weeds in granular or liquid form such as "Treflan", "Dymid", or equal. Methods and rates of application shall be in strict compliance to manufacturer's directions and acceptable to the Engineer.
- D. The herbicide selected shall be safe for use around ornamental plantings, have long-lasting weed control, and shall be resistant to leaching away under excessive rainfall.
- E. A second application of the herbicide shall be made on the surface of the landscape gravel or riprap sometime after the first six (6) months, but not later than 12-months. Same methods and rates apply as specified previously.

## PART 3 -- EXECUTION

### 3.01 GRADING

- A. After approval of the rough grading, the Contractor shall commence his preparations of the subgrade for the various major conditions of the work as follows:
  - 1. Bare soil for riprap area at subgrade (24-inches below final grade, or as directed by the Engineer).
  - 2. Topsoil for lawn and road shoulder seed area - scarify 2-inch depth of subgrade (4-inches below final grade) prior to placing topsoil.
- B. Final surface grading of the topsoiled, landscape graveled, and riprapped areas shall be mechanically raked or hand raked to an even finished surface alignment.

### 3.02 TOPSOIL

- A. Topsoil shall be spread in place for quantity required for lawn and road shoulder seed areas at 4-inch consolidated depth, and sufficient quantity for certain plant beds and backfill for shrubs and trees as specified.

### 3.03 SEEDBED PREPARATION

- A. Contractor shall prepare all areas to receive temporary or permanent seeding measures prior to planting.
- B. Topsoil shall be placed in areas to be seeded and roughened with tracked equipment or other suitable measures. Slopes steeper than 3:1 may be roughened by grooving, furrowing, tracking, or stair step grading. Slopes flatter than 3:1 should be grooved by disking, harrowing, raking, operating planting equipment on the contour.
- C. Soil amendments including, but not limited to, lime and fertilizer shall be spread as necessary, and at the rates specified in this Section. Seeding shall be as per the type and rates specified in this Section. Seed shall be broadcast as soon as possible following roughening, before surface has been sealed by rainfall.

### 3.04 HYDROSEEDING AND GRASS

- A. The Contractor shall grow a stand of grass by hydroseeding method on all disturbed areas. The Contractor shall be responsible for the satisfactory growth of grass throughout the period of the one-year guarantee.
- B. The Contractor's work shall include the preparation of the topsoil and bare soil seed bed, application of fertilizer, limestone, mulching, inoculant, temporary soil stabilizer, watering, and all other operations necessary to provide a satisfactory growth of sod at the end of the one-year maintenance period. Areas without satisfactory sod at the end of one (1) year shall be replanted until satisfactory growth is obtained and acceptable to the Engineer.
- C. All areas to be seeded shall be done by the hydraulic seeding method including all additives and amendments required. A "Reinco", "Finn", or "Bowie" type hydromulcher with adjustable nozzles and extension hoses, or equal, shall be utilized. General capacity of tank should range from 500 to 2,500 gallons, or as approved by the Engineer.
- D. Hydraulic seeding shall be carried out in three steps. Step one shall consist of the application of lime. In step two the seed mixture shall be mixed with the fertilizer, wood cellulose fiber mulch, and any required inoculants and applied to the seed bed. Step three shall consist of application of top dressing during the first spring or fall, whichever comes first, after step two.
- E. Top dressing shall consist of a commercial grade fertilizer plus Nitrogen or other analysis as may be recommended by soil testing. Types and application rates of seed mixtures, lime, fertilizer, and wood cellulose fiber mulch, shall be as shown in the Seeding Schedule.
- F. Ingredients for the mixture and steps should be dumped into a tank of water and thoroughly mixed to a homogeneous slurry and sprayed out under a minimum of 300-350 pounds pressure, in suitable proportions to accommodate the type and capacity of the hydraulic machine to be used. Applications shall be evenly sprayed over the ground surface. The Contractor shall free the topsoil of stones, roots, rubbish, and other deleterious materials and dispose of same off the site. The bare soil, except existing steep embankment area, shall be rough raked to remove stones, roots, and rubbish over 4-inches in size, and other deleterious materials and dispose of same off the site.
- G. No seeding should be undertaken in windy or unfavorable weather, when the ground is too wet to rake easily, when it is in a frozen condition, or too dry. Any bare spots shown in two to

three weeks shall be recultivated, fertilized at half the rate, raked, seeded, and mulched again by mechanical or hand broadcast method acceptable to the Engineer.

- H. Areas that have been seeded with a temporary seed mixture shall be mowed to a height of less than 2-inches and scarified prior to seeding with the permanent seed mixture.
- I. The Contractor shall provide, at his own expense, protection for all seeded areas against trespassing and damage at all times until acceptance of the work. Slopes shall be protected from damage due to erosion, settlement, and other causes and shall be repaired promptly at the Contractor's expense.
- J. The Contractor shall water newly seeded areas of the lawn and road shoulder mix once a week until the grasses have germinated sufficiently to produce a healthy turf, or unless otherwise directed by the Engineer. Each watering shall provide three (3) gallons per square yard. The Contractor shall furnish all necessary hoses, sprinklers, and connections.
- K. The first and second cutting of the lawn grasses only shall be done by the Contractor. All subsequent cuttings will be done by the Owner's forces in a manner specified by the Contractor.

### 3.05 DITCH AND SWALE EROSION PROTECTION

- A. All ditches and swales indicated on the Drawings shall be lined with a rolled erosion control product (RECP). The area to be covered shall be properly graded and hydroseeded before the RECP is installed. Installation shall be in accordance with Section 02276, Erosion and Sedimentation Control.

### 3.06 MAINTENANCE

- A. The Contractor shall be responsible for maintaining all seeded areas through the end of his warranty period. Maintenance shall include but not be limited to, annual fertilization, mowing, repair of seeded areas, irrigation, and weed control. The Contractor shall provide, at his own expense, protection for all seeded areas against trespassing and damage at all times until acceptance of the work. Slopes shall be protected from damage due to erosion, settlement, and other causes and shall be repaired promptly at the Contractor's expense.
- B. Annual fertilization shall consist of an application of 500#/acre of 10-10-10 commercial grade fertilizer, or its equivalent and 60#/acre of nitrogen in early fall, or other analysis as may be determined by soil test. Annual fertilization shall be in addition to top dressing and shall be performed by the Contractor each fall season after planting until the work is substantially complete.
- C. Mowing shall be scheduled so as to maintain a minimum stand height of 4-inches or as directed by the Engineer. Stand height shall be allowed to reach 8 to 10-inches prior to mowing.
- D. All seeded areas shall be inspected on a regular basis and any necessary repairs or reseedings made within the planting season, if possible. If the stand should be over 60% damaged, it shall be re-established following the original seeding recommendations.
- E. Weed growth shall be maintained mechanically and/or with herbicides. When chemicals are used, the Contractor shall adhere strictly to the instructions on the label of the herbicide. No herbicide shall be used without prior approval of the Engineer.

3.07 CLEANUP

- A. The Contractor shall remove from the site all subsoil excavated from his work and all other debris including, but not limited to, branches, paper, and rubbish in all landscape areas, and remove temporary barricades as the work proceeds.
- B. All areas shall be kept in a neat, orderly condition at all times. Prior to final acceptance, the Contractor shall clean up the entire landscaped area to the satisfaction of the Engineer.

3.08 SEEDING SCHEDULE

- A. All seeding and mulching to be completed by the Contractor shall conform to the following schedule. No permanent seeding shall be performed from May 1 - August 31 and November 1 - February 14. Temporary seed mixtures will be used during these times if seeding is necessary. Areas seeded with temporary seed mixtures shall be reseeded by the Contractor at no additional cost to the Owner with permanent seed as directed by the Engineer.
- B. Application rates of seed mixtures, lime, fertilizer, mulch and top dressing are shown in the schedule.

**SEEDING SCHEDULE**

Application Rates (Pounds/Acre)

Seed Mixture	Planting Season	Lime <sup>a</sup>	Seed	Fertilizer	Straw <sup>b</sup> Mulch	Topdressing <sup>a</sup>	Annual Fertilizer	Comments
P	Feb. 15-April 30 Sept. 1-Oct. 31	4000	150	1000	4000	500 of 10-10-10 60 of Nitrogen	Same as Topdressing	Preferred planting seasons are Sept. 1 – Sept. 30 and Feb. 15 – March 30.
TW	Jan. 1-May 1	2000	170	750	4000	-	-	Over seed with Type P seed mixture during next planting season.
TS	May 1-Aug. 15	2000	40	750	4000	-	-	Over seed with Type P seed mixture during next planting season.
TF	Aug. 15-Dec. 30	2000	120	1000	4000	-	-	Over seed with Type P seed mixture during next planting season.

Footnotes:

- a. Application rates and/or chemical analysis shall be confirmed or established by soil test.
- b. On cut and fill slopes 2:1 or steeper, add 30#/acre Sericea Lespedeza to Type P seed mixture. Use scarified seed for spring plantings and unscarified for fall plantings.
- c. Apply asphalt at rate of 0.10 gallon per square yard (10 gal/1000 ft<sup>2</sup>) to tack straw mulch.

- END OF SECTION -



SECTION 03100

CONCRETE FORMWORK

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Provide materials, labor, and equipment required for the design and construction of all concrete formwork, bracing, shoring and supports in accordance with the provisions of the Contract Documents.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03200 - Reinforcing Steel
- B. Section 03250 - Concrete Accessories
- C. Section 03290 - Joints in Concrete
- D. Section 03300 - Cast-in-Place Concrete

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.
  - 1. Kentucky Building Code
  - 2. ACI 318 - Building Code Requirements for Structural Concrete
  - 3. ACI 301 - Specifications for Structural Concrete for Buildings
  - 4. ACI 347 - Recommended Practice for Concrete Formwork
  - 5. U.S. Product Standard for Concrete Forms, Class I, PS 1
  - 6. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals.
  - 1. Manufacturer's data on proposed form release agent
  - 2. Manufacturer's data on proposed formwork system including form ties

## 1.05 QUALITY ASSURANCE

- A. Concrete formwork shall be in accordance with ACI 301, ACI 318, and ACI 347.

## PART 2 -- PRODUCTS

### 2.01 FORMS AND FALSEWORK

- A. All forms shall be smooth surface forms unless otherwise specified.
- B. Wood materials for concrete forms and falsework shall conform to the following requirements:
  - 1. Lumber for bracing, shoring, or supporting forms shall be Douglas Fir or Southern Pine, construction grade or better, in conformance with U.S. Product Standard PS20. All lumber used for forms, shoring or bracing shall be new material.
  - 2. Plywood for concrete formwork shall be new, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Pine high density overlaid (HDO) plywood manufactured especially for concrete formwork and shall conform to the requirements of PS1 for Concrete Forms, Class I, and shall be edge sealed. Thickness shall be as required to support concrete at the rate it is placed, but not less than 5/8-inch thick.
- C. Other form materials such as metal, fiberglass, or other acceptable material that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line and grade indicated may be submitted to the Engineer for approval, but only materials that will produce a smooth form finish equal or better than the wood materials specified will be considered.

### 2.02 FORMWORK ACCESSORIES

- A. Form ties shall be provided with a plastic cone or other suitable means for forming a conical hole to ensure that the form tie may be broken off back of the face of the concrete. The maximum diameter of removable cones for rod ties, or of other removable form-tie fasteners having a circular cross-section, shall not exceed 7/8-inch, and all such fasteners shall be such as to leave holes of regular shape for reaming.
- B. Form ties for water-retaining structures shall have integral waterstops. Removable taper ties may be used when acceptable to the Engineer. A preformed mechanical EPDM rubber plug shall be used to seal the hole left after the removal of the taper tie. Plug shall be X-Plug by the Greenstreak Group, Inc., or approved equal. Friction fit plugs shall not be used.
- C. Form release agent shall be a blend of natural and synthetic chemicals that employs a chemical reaction to provide quick, easy and clean release of concrete from forms. It shall not stain the concrete and shall leave the concrete with a paintable surface. Formulation of the form release agent shall be such that it would minimize formation of "bug holes" in cast-in-place concrete.

## PART 3 -- EXECUTION

### 3.01 FORM DESIGN

- A. Forms and falsework shall be designed for total dead load, plus all construction live load as outlined in ACI 347. Design and engineering of formwork and safety considerations during construction shall be the responsibility of the Contractor.
- B. Forms shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete. The maximum deflection of facing materials reflected in concrete surfaces exposed to view shall be 1/240 of the span between structural members.
- C. All forms shall be designed for predetermined placing rates per hour, considering expected air temperatures and setting rates.

### 3.02 CONSTRUCTION

- A. The type, size, quality, and strength of all materials from which forms are made shall be subject to the approval of the Engineer. No falsework or forms shall be used which are not clean and suitable. Deformed, broken or defective falsework and forms shall be removed from the work.
- B. Forms shall be smooth and free from surface irregularities. Suitable and effective means shall be provided on all forms for holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete. Joints between the forms shall be sealed to eliminate any irregularities. The arrangement of the facing material shall be orderly and symmetrical, with the number of seams kept to a practical minimum.
- C. Forms shall be true to line and grade, and shall be sufficiently rigid to prevent displacement and sagging between supports. Curved forms shall be used for curved and circular structures. Straight panels joined at angles will not be acceptable for forming curved structures. Forms shall be properly braced or tied together to maintain their position and shape under a load of freshly-placed concrete. Facing material shall be supported with studs or other backing which shall prevent both visible deflection marks in the concrete and deflections beyond the tolerances specified.
- D. Forms shall be mortar tight so as to prevent the loss of water, cement and fines during placing and vibrating of the concrete. Specifically, the bottom of wall forms that rest on concrete footings or slabs shall be provided with a gasket to prevent loss of fines and paste during placement and vibration of concrete. Such gasket may be a 1 to 1-1/2 inch diameter polyethylene rod held in position to the underside of the wall form.
- E. All vertical surfaces of concrete members shall be formed, and side forms shall be provided for all footings, slab edges and grade beams, except where placement of the concrete against the ground is called for on the Drawings. Not less than 1-inch of concrete shall be added to the thickness of the concrete member as shown where concrete is permitted to be placed against trimmed ground in lieu of forms. Such permission will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.

- F. All forms shall be constructed in such a manner that they can be removed without hammering or prying against the concrete. Wood forms shall be constructed for wall openings to facilitate loosening and to counteract swelling of the forms.
- G. Adequate clean-out holes shall be provided at the bottom of each lift of forms. Temporary openings shall be provided at the base of column forms and wall forms and at other points to facilitate cleaning and observation immediately before the concrete is deposited. The size, number and location of such clean-outs shall be as acceptable to the Engineer.
- H. Construction joints shall not be permitted at locations other than those shown or specified, except as may be acceptable to the Engineer. When a second lift is placed on hardened concrete, special precautions shall be taken in the way of the number, location and tightening of ties at the top of the old lift and bottom of the new to prevent any unsatisfactory effect whatsoever on the concrete. For flush surfaces at construction joints exposed to view, the contact surface of the form sheathing over the hardened concrete in the previous placement shall be lapped by not more than 1 inch. Forms shall be held against hardened concrete to prevent offset or loss of mortar at construction joints and to maintain a true surface.
- I. The formwork shall be cambered to compensate for anticipated deflections in the formwork due to the weight and pressure of the fresh concrete and due to construction loads. Set forms and intermediate screed strips for slabs accurately to produce the designated elevations and contours of the finished surface. Ensure that edge forms and screed strips are sufficiently strong to support vibrating screeds or roller pipe screeds if the nature of the finish specified requires the use of such equipment. When formwork is cambered, set screeds to a like camber to maintain the proper concrete thickness.
- J. Positive means of adjustment (wedges or jacks) for shores and struts shall be provided and all settlement shall be taken up during concrete placing operation. Shores and struts shall be securely braced against lateral deflections. Wedges shall be fastened firmly in place after final adjustment of forms prior to concrete placement. Formwork shall be anchored to shores or other supporting surfaces or members to prevent upward or lateral movement of any part of the formwork system during concrete placement. If adequate foundation for shores cannot be secured, trussed supports shall be provided.
- K. Runways shall be provided for moving equipment with struts or legs. Runways shall be supported directly on the formwork or structural member without resting on the reinforcing steel.

### 3.03 TOLERANCES

- A. Unless otherwise indicated in the Contract Documents, formwork shall be constructed so that the concrete surfaces will conform to the tolerance limits listed in ACI 117.
- B. Structural framing of reinforced concrete around elevators and stairways shall be accurately plumbed and located within 1/4 in. tolerance from established dimensions.
- C. The Contractor shall establish and maintain in an undisturbed condition and until final completion and acceptance of the project, sufficient control points and bench marks to be used for reference purposes to check tolerances. Plumb and string lines shall be installed before concrete placement and shall be maintained during placement. Such lines shall be used by Contractor's personnel and by the Engineer and shall be in sufficient number and

properly installed. During concrete placement, the Contractor shall continually monitor plumb and string line form positions and immediately correct deficiencies.

- D. Regardless of the tolerances specified, no portion of the building shall extend beyond the legal boundary of the building.

#### 3.04 FORM ACCESSORIES

- A. Suitable moldings shall be placed to bevel or round all exposed corners and edges of beams, columns, walls, slabs, and equipment pads. Chamfers shall be 3/4 inch unless otherwise noted.
- B. Form ties shall be so constructed that the ends, or end fasteners, can be removed without causing appreciable spalling at the faces of the concrete. After ends, or end fasteners of form ties have been removed, the embedded portion of the ties shall terminate not less than 2 inches from the formed face of the concrete that is exposed to water or enclosed surfaces above the water surface, and not less than 1 inch from the formed face of all other concrete. Holes left by the removal of form tie cones shall be reamed with suitable toothed reamers so as to leave the surface of the holes clean and rough before being filled with mortar as specified in Section 03350 - Concrete Finishing. No form-tying device or part thereof, other than metal, shall be left embedded in the concrete. Ties shall not be removed in such manner as to leave a hole extending through the interior of the concrete member. The use of snap-ties which cause spalling of the concrete upon form stripping or tie removal will not be permitted. No snap ties shall be broken off until the concrete is at least three days old. If steel panel forms are used, rubber grommets shall be provided where the ties pass through the form in order to prevent loss of cement paste.

#### 3.05 APPLICATION - FORM RELEASE AGENT

- A. Forms for concrete surfaces that will not be subsequently waterproofed shall be coated with a form release agent. Form release agent shall be applied on formwork in accordance with manufacturer's recommendations.

#### 3.06 INSERTS AND EMBEDDED ITEMS

- A. Sleeves, pipe stubs, inserts, anchors, expansion joint material, waterstops, and other embedded items shall be positioned accurately and supported against displacement prior to concreting. Voids in sleeves, inserts, and anchor slots shall be filled temporarily with readily removable material to prevent the entry of concrete into the voids.

#### 3.07 FORM CLEANING AND REUSE

- A. The inner faces of all forms shall be thoroughly cleaned prior to concreting. Forms may be reused only if in good condition and only if acceptable to the Engineer. Light sanding between uses will be required wherever necessary to obtain uniform surface texture. Unused tie rod holes in forms shall be covered with metal caps or shall be filled by other methods acceptable to the Engineer.

#### 3.08 FORM REMOVAL AND SHORING

- A. Forms shall not be disturbed until the concrete has attained sufficient strength. Sufficient strength shall be demonstrated by structural analysis considering proposed loads, strength of forming and shoring system, and concrete strength data. Shoring shall not be removed

until the supported member has acquired sufficient strength to support its weight and the load upon it. Members subject to additional loads during construction shall be adequately shored to sustain all resulting stresses. Forms shall be removed in such manner as not to impair safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby.

- B. Provided the strength requirements specified above have been met and subject to the Engineer's approval, forms may be removed at the following minimum times. The Contractor shall assume full responsibility for the strength of all such components from which forms are removed prior to the concrete attaining its full design compressive strength. Shoring may be required at the option of the Engineer beyond these periods.

**Ambient Temperature (°F.) During Concrete Placement**

	<u>Over 95°</u>	<u>70°-95°</u>	<u>60°-70°</u>	<u>50°-60°</u>	<u>Below 50°</u>
Walls	5 days	2 days	2 days	3 days	Do not remove until directed by Engineer (7 days minimum)
Columns	7 days	2 days	3 days	4 days	
Beam Soffits	10 days	7 days	7 days	7 days	
Elevated Slabs	12 days	7 days	7 days	7 days	

- C. When, in the opinion of the Engineer, conditions of the work or weather justify, forms may be required to remain in place for longer periods of time.
- D. An accurate record shall be maintained by the Contractor of the dates of concrete placings and the exact location thereof and the dates of removal of forms. These records shall be available for inspection at all times at the site, and two copies shall be furnished the Engineer upon completion of the concrete work.

**3.09 RESHORING**

- A. When reshoring is permitted or required the operations shall be planned in advance and subjected to approval by the Engineer.
- B. Reshores shall be placed after stripping operations are complete but in no case later than the end of the working day on which stripping occurs.
- C. Reshoring for the purpose of early form removal shall be performed so that at no time will large areas of new construction be required to support their own weight. While reshoring is under way, no construction or live loads shall be permitted on the new construction. Reshores shall be tightened to carry their required loads but they shall not be overtightened so that the new construction is overstressed. Reshores shall remain in place until the concrete has reached its specified 28-day strength, unless otherwise specified.
- D. For floors supporting shores under newly placed concrete, the original supporting shores shall remain in place or reshores shall be placed. The shoring or reshoring system shall have a capacity sufficient to resist the anticipated loads and in all cases shall have a capacity equal to at least one-half of the capacity of the shoring system above. Reshores shall be located directly under a reshore position above unless other locations are permitted.

- E. In multi-story buildings, reshoring shall extend over a sufficient number of stories to distribute the weight of newly placed concrete, forms, and construction live loads so the design superimposed loads of the floors supporting shores are not exceeded.

- END OF SECTION -

THIS PAGE LEFT BLANK INTENTIONALLY



SECTION 03200

REINFORCING STEEL

PART 1 -- GENERAL

1.01 THE REQUIREMENTS

- A. Provide all concrete reinforcing including all cutting, bending, fastening and any special work necessary to hold the reinforcing steel in place and protect it from injury and corrosion in accordance with the requirements of this section.
- B. Provide deformed reinforcing bars to be grouted into reinforced concrete masonry walls.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03100 - Concrete Formwork
- B. Section 03250 - Concrete Accessories
- C. Section 03300 - Cast-in-Place Concrete

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.

- 1. Kentucky Building Code
- 2. CRSI - Concrete Reinforcing Institute Manual of Standard Practice
- 3. ACI SP66 - ACI Detailing Manual
- 4. ACI 315 - Details and Detailing of Concrete Reinforcing
- 5. ACI 318 - Building Code Requirements for Structural Concrete
- 6. ICC-ES AC193 Acceptance Criteria for Expansion and Screw Anchors (Concrete)
- 7. WRI - Manual of Standard Practice for Welded Wire Fabric
- 8. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcing
- 9. ASTM A 1064 - Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300, Submittals.

1. Detailed placing and shop fabricating drawings, prepared in accordance with ACI 315 and ACI Detailing Manual - (SP66), shall be furnished for all concrete reinforcing. These drawings shall be made to such a scale as to clearly show joint locations, openings, and the arrangement, spacing and splicing of the bars.
2. Mill test certificates - 3 copies of each.
3. Description of the reinforcing steel manufacturer's marking pattern.
4. Requests to relocate any bars that cause interferences or that cause placing tolerances to be violated.
5. Proposed supports for each type of reinforcing.
6. Request to use splices not shown on the Drawings.
7. Request to use mechanical couplers along with manufacturer's literature on mechanical couplers with instructions for installation, and certified test reports on the couplers' capacity.
8. Request for placement of column dowels without the use of templates.
9. Request and procedure to field bend or straighten partially embedded reinforcing.
10. International Code Council-Evaluation Services Report (ICC-ES ESR) for dowel adhesives.
11. Certification that all installers of dowel adhesive are certified as Adhesive Anchor Installers in accordance with the ACI-CRSI Anchor Installer Certification Program.
12. Adhesive dowel testing plan.

1.05 QUALITY ASSURANCE

- A. If requested by the Engineer, the Contractor shall provide samples from each load of reinforcing steel delivered in a quantity adequate for testing. Costs of initial tests will be paid by the Owner. Costs of additional tests due to material failing initial tests shall be paid by the Contractor.
- B. Provide a list of names of all installers who are trained by the Manufacturer's Field Representative on this jobsite prior to installation of products. Record must include the installer name, date of training, products included in the training and trainer name and contact information.
- C. Provide a copy of the current ACI/CRSI "Adhesive Anchor Installer" certification cards for all installers who will be installing adhesive anchors in the horizontal to vertically overhead orientation.
- D. Inspections of the adhesive dowel system may be made by the Engineer or other representatives of the Owner in accordance with the requirements of the ESR published by

the manufacturer. Provide adequate time and access for inspections of products and anchor holes prior to injection, installation, and proof testing.

## PART 2 -- PRODUCTS

### 2.01 REINFORCING STEEL

- A. Bar reinforcing shall conform to the requirements of ASTM A 615 for Grade 60 Billet Steel reinforcing. All reinforcing steel shall be from domestic mills and shall have the manufacturer's mill marking rolled into the bar which shall indicate the producer, size, type and grade. All reinforcing bars shall be deformed bars. Smooth reinforcing bars shall not be used unless specifically called for on Drawings.
- B. Welded wire fabric reinforcing shall conform to the requirements of ASTM A 1064 and the details shown on the Drawings.
- C. A certified copy of the mill test on each load of reinforcing steel delivered showing physical and chemical analysis shall be provided, prior to shipment. The Engineer reserves the right to require the Contractor to obtain separate test results from an independent testing laboratory in the event of any questionable steel. When such tests are necessary because of failure to comply with this Specification, such as improper identification, the cost of such tests shall be borne by the Contractor.
- D. Field welding of reinforcing steel will not be allowed.
- E. Use of coiled reinforcing steel will not be allowed.

### 2.02 ACCESSORIES

- A. Accessories shall include all necessary chairs, slab bolsters, concrete blocks, tie wires, dips, supports, spacers and other devices to position reinforcing during concrete placement. Wire bar supports shall be plastic protected (CRSI Class 1).
- B. Concrete blocks (dobies), used to support and position bottom reinforcing steel, shall have the same or higher compressive strength as specified for the concrete in which it is located.

### 2.03 DOWEL ADHESIVE SYSTEM

- A. Where shown on the Drawings, reinforcing bars anchored into hardened concrete with a dowel adhesive system shall use a two-component adhesive mix which shall be injected with a static mixing nozzle following manufacturer's instructions.
- B. All holes shall be drilled in accordance with the manufacturer's instructions except that core drilled holes shall not be permitted unless specifically allowed by the Engineer. Cored holes, if allowed by the manufacturer and approved by the Engineer, shall be roughened in accordance with manufacturer's requirements.
- C. Thoroughly clean drill holes of all debris, drill dust, and water in accordance with manufacturer's instructions prior to installation of adhesive and reinforcing bar.

- D. Degree of hole dampness shall be in strict accordance with manufacturer recommendations. Installation conditions shall be either dry or water-saturated. Water filled or submerged holes shall not be permitted unless specifically approved by the Engineer.
- E. Injection of adhesive into the hole shall be performed in a manner to minimize the formation of air pockets in accordance with the manufacturer's instructions.
- F. Embedment Depth:
  - 1. The embedment depth of the bar shall be as shown on the Drawings.
  - 2. Where the embedment depth is not shown on the Drawings, the embedment depth shall be determined to provide the minimum allowable bond strength equal to the tensile strength of the rebar according to the manufacturer's ICC-ES ESR.
  - 3. The embedment depth shall be determined using the actual concrete compressive strength, a cracked concrete state, maximum long term temperature of 110 degrees F, and maximum short term temperature of 140 degrees F. In no case shall the embedment depth be less than the minimum, or more than the maximum, embedment depths stated in the manufacturer's ICC-ES ESR.
- G. Engineer's approval is required for use of this system in locations other than those shown on the Drawings.
- H. The adhesive system shall be IBC compliant for use in both cracked and uncracked concrete in all Seismic Design Categories and shall be "Epcon C6+ Adhesive Anchoring System" as manufactured by ITW Redhead, " HIT-HY 200 Adhesive Anchoring System" as manufactured by Hilti, Inc. "SET-XP Epoxy Adhesive Anchors" as manufactured by Simpson Strong-Tie Co. or "Pure 110+ Epoxy Adhesive Anchor System" by DeWalt. Fast-set epoxy formulations shall not be acceptable. No or equal products will be considered, unless pre-qualified and approved.
- I. All individuals installing dowel adhesive system shall be certified as an Adhesive Anchor Installer in accordance with the ACI-CRSI Anchor Installation Certification Program.

### PART 3 – EXECUTION

#### 3.01 TEMPERATURE REINFORCING

- A. Unless otherwise shown on the Drawings or in the absence of the concrete reinforcing being shown, the minimum cross sectional area of horizontal and vertical concrete reinforcing in walls shall be 0.0033 times the gross concrete area and the minimum cross sectional area of reinforcing perpendicular to the principal reinforcing in slabs shall be 0.0020 times the gross concrete area. Temperature reinforcing shall not be spaced further apart than five times the slab or wall thickness, nor more than 18 inches.

#### 3.02 FABRICATION

- A. Reinforcing steel shall be accurately formed to the dimensions and shapes shown on the Drawings and the fabricating details shall be prepared in accordance with ACI 315 and ACI 318, except as modified by the Drawings.

- B. The Contractor shall fabricate reinforcing bars for structures in accordance with the bending diagrams, placing lists and placing Drawings.
- C. No fabrication shall commence until approval of Shop Drawings has been obtained. All reinforcing bars shall be shop fabricated unless approved to be bent in the field. Reinforcing bars shall not be straightened or rebent in a manner that will injure the material. Heating of bars will not be permitted.
- D. Welded wire fabric with longitudinal wire of W9.5 size or smaller shall be either furnished in flat sheets or in rolls with a core diameter of not less than 10 inches. Welded wire fabric with longitudinal wires larger than W9.5 size shall be furnished in flat sheets only.

### 3.03 DELIVERY, STORAGE AND HANDLING

- A. All reinforcing shall be neatly bundled and tagged for placement when delivered to the job site. Bundles shall be properly identified for coordination with mill test reports.
- B. Reinforcing steel shall be stored above ground on platforms or other supports and shall be protected from the weather at all times by suitable covering. It shall be stored in an orderly manner and plainly marked to facilitate identification.
- C. Reinforcing steel shall at all times be protected from conditions conducive to corrosion until concrete is placed around it.
- D. The surfaces of all reinforcing steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar and other foreign substances immediately before the concrete is placed. Where there is delay in depositing concrete, reinforcing shall be reinspected and if necessary recleaned.

### 3.04 PLACING

- A. Reinforcing steel shall be accurately positioned as shown on the Drawings and shall be supported and wired together to prevent displacement, using annealed iron wire ties or suitable clips at intersections. All reinforcing steel shall be supported by concrete, plastic or plastic protected (CRSI Class 1) metal supports, spacers or metal hangers which are strong and rigid enough to prevent any displacement of the reinforcing steel. Where concrete is to be placed on the ground, supporting concrete blocks (or dobies) shall be used in sufficient numbers to support the reinforcing bars without settlement. In no case shall concrete block supports be continuous.
- B. The portions of all accessories in contact with the formwork shall be made of plastic or steel coated with a 1/8 inch minimum thickness of plastic which extends at least 1/2 inch from the concrete surface. Plastic shall be gray in color.
- C. Tie wires shall be bent away from the forms in order to provide the specified concrete coverage.
- D. Reinforcing bars additional to those shown on the Drawings, which may be found necessary or desirable by the Contractor for the purpose of securing reinforcing in position, shall be provided by the Contractor at no additional cost to the Owner.
- E. Reinforcing placing, spacing, and protection tolerances shall be within the limits specified in ACI 318 except where in conflict with the Building Code, unless otherwise specified.

- F. Reinforcing bars may be moved within one bar diameter as necessary to avoid interference with other concrete reinforcing, conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed placing tolerances, the resulting arrangement of bars shall be as acceptable to the Engineer.
- G. Welded wire fabric shall be supported on slab bolsters spaced not less than 30 inches on centers, extending continuously across the entire width of the reinforcing mat and supporting the reinforcing mat in the plane shown on the Drawings.
- H. Reinforcing shall not be straightened or rebent unless specifically shown on the drawings. Bars with kinks or bends not shown on the Drawings shall not be used. Coiled reinforcement shall not be used.
- I. Dowel Adhesive System shall be installed in strict conformance with the manufacturer's recommendations and as required in Article 2.04 above. A representative of the manufacturer must be on site prior to adhesive dowel installation to provide instruction on proper installation procedures for all adhesive dowel installers. Testing of adhesive dowels shall be as indicated below. If the dowels have a hook at the end to be embedded in subsequent work, an approved mechanical coupler shall be provided at a convenient distance from the face of existing concrete to facilitate adhesive dowel testing while maintaining required hook embedment in subsequent work.
- J. All adhesive dowel installations in the horizontal or overhead orientation shall be conducted by a certified Adhesive Anchor Installer as certified by ACI/CSRI per ACI 318-11 9.2.2. Current AAI Certification must be submitted to the Engineer of Record for approval prior to commencement of any adhesive anchor installations.
- K. Adhesive Dowel Testing
  - 1. At all locations where adhesive dowels are shown on the Drawings, at least 5 percent of all adhesive dowels installed shall be tested to the value indicated on the Drawings, with a minimum of one tested dowel per group. If no test value is indicated on the Drawings but the installed dowel is under direct tension, the Contractor shall notify the Engineer to verify the required test value.
  - 2. Contractor shall submit a plan and schedule indicating locations of dowels to be tested, load test values and proposed dowel testing procedure (including a diagram of the testing equipment proposed for use) prior to conducting any testing. The testing equipment shall have a minimum of three support points and shall be of sufficient size to locate the edge of supports no closer than two times the anchor embedment depth from the center of the anchor.
  - 3. Where Contract Documents indicate adhesive dowel design is the Contractor's responsibility, the Contractor shall submit a plan and schedule indicating locations of dowels to be tested and load test values, sealed by a Professional Engineer currently registered in the State of Kentucky. The Contractor shall also submit documentation indicating the Contractor's testing procedures have been reviewed and the proposed procedures are acceptable.
  - 4. Adhesive Dowel shall have no visible indications of displacement or damage during or after the proof test. Concrete cracking in the vicinity of the dowel after loading shall be considered a failure. Dowels exhibiting damage shall be removed and replaced. If more than 5 percent of tested dowels fail, then 100 percent of dowels shall be proof tested.

5. Proof testing of adhesive dowels shall be performed by an independent testing laboratory hired directly by the Contractor. The Contractor shall be responsible for costs of all testing, including additional testing required due to previously failed tests.

### 3.05 SPLICING

- A. Reinforcing bar splices shall only be used at locations shown on the Drawings. When it is necessary to splice reinforcing at points other than where shown, the splice shall be as acceptable to the Engineer.
- B. The length of lap for reinforcing bars, unless otherwise shown on the Drawings shall be in accordance with ACI 318 for a class B splice.
- C. Laps of welded wire fabric shall be in accordance with ACI 318. Adjoining sheets shall be securely tied together with No. 14 tie wire, one tie for each 2 running feet. Wires shall be staggered and tied in such a manner that they cannot slip.
- D. Mechanical splices shall be used only where shown on the drawings or when approved by the Engineer.
- E. Couplers which are located at a joint face shall be a type which can be set either flush or recessed from the face as shown on the Drawings. The couplers shall be sealed during concrete placement to completely eliminate concrete or cement paste from entering. After the concrete is placed, couplers intended for future connections shall be plugged and sealed to prevent any contact with water or other corrosive materials. Threaded couplers shall be plugged with plastic plugs which have an O-ring seal.

### 3.06 INSPECTION

- A. The Contractor shall advise the Engineer of his intentions to place concrete and shall allow him adequate time to inspect all reinforcing steel before concrete is placed.
- B. The Contractor shall advise the Engineer of his intentions to place grout in masonry walls and shall allow him adequate time to inspect all reinforcing steel before grout is placed.

### 3.07 CUTTING OF EMBEDDED REBAR

- A. The Contractor shall not cut embedded rebar cast into structural concrete without prior approval.

- END OF SECTION -

SECTION 03250

CONCRETE ACCESSORIES

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Furnish all materials, labor and equipment required to provide all concrete accessories including waterstops, expansion joint material, joint sealants, expansion joint seals, contraction joint inserts, and epoxy bonding agent.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03100 - Concrete Formwork
- B. Section 03290 - Joints in Concrete.
- C. Section 03300 - Cast-in-Place Concrete
- D. Section 07900 - Joint Fillers, Sealants, and Caulking

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.

- |    |             |   |
|----|-------------|---|
| 1. | ASTM C881   | Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete  |
| 2. | ASTM D412   | Standard Tests for Rubber Properties in Tension   |
| 3. | ASTM D 624  | Standard Test method for Rubber Property - Tear Resistance  |
| 4. | ASTM D 638  | Standard Test Method for Tensile Properties of Plastics   |
| 5. | ASTM D1751  | Standard Specifications for Preformed Expansion Joint fillers for Concrete Paving and Structural Construction (nonextruding and resilient bituminous types) |
| 6. | ASTM D 1752 | Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction                         |
| 7. | ASTM D 1171 | Standard Test Method for Ozone Resistance at 500 pphm   |
| 8. | ASTM D 471  | Standard Test Method for Rubber Properties  |



#### 1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals.
  - 1. Manufacturer's literature on all products specified herein including material certifications.
  - 2. Proposed system for supporting PVC waterstops in position during concrete placement
  - 3. Samples of products if requested by the Engineer.

#### PART 2 -- PRODUCTS

##### 2.01 POLYVINYL CHLORIDE (PVC) WATERSTOPS

- A. PVC waterstops for construction joints shall be flat ribbed type, 6 inches wide with a minimum thickness at any point of 3/8 inches.
- B. Waterstops for expansion joints shall be ribbed with a center bulb. They shall be 9 inches wide with a minimum thickness at any point of 3/8 inch unless shown or specified otherwise. The center bulb shall have a minimum outside diameter of 1 inch and a minimum inside diameter of 1/2 inch.
- C. The waterstops shall be manufactured from virgin polyvinyl chloride plastic compound and shall not contain any scrap or reclaimed material or pigment whatsoever. The properties of the polyvinyl chloride compound used, as well as the physical properties of the waterstops, shall exceed the requirements of the U.S. Army Corps. of Engineers' Specification CRD-C572. The waterstop material shall have an off-white, milky color.
- D. The required minimum physical characteristics for this material are:
  - 1. Tensile strength - 1,750 psi (ASTM D-638).
  - 2. Ultimate elongation - not less than 280% (ASTM D-638).
- E. No reclaimed PVC shall be used for the manufacturing of the waterstops. The Contractor shall furnish certification that the proposed waterstops meet the above requirements.
- F. PVC waterstops shall be as manufactured by BoMetals, Inc., DuraJoint Concrete Accessories, or Sika Greenstreak.
- G. All waterstop intersections, both vertical and horizontal, shall be made from factory fabricated corners and transitions. Only straight butt joint splices shall be made in field.

##### 2.02 RETROFIT WATERSTOPS

- A. Retrofit waterstops shall be used where specifically shown on Drawings for sealing joints between existing concrete construction and new construction.
- B. Retrofit waterstops shall be PVC waterstops fabricated from material as described in Section 2.01 of this Specification.

- C. Retrofit waterstop shall be attached to existing concrete surface as shown on Drawings.
- D. Use of split waterstop in lieu of specially fabricated retrofit waterstop will not be acceptable.
- E. Retrofit Waterstop manufacturer must provide a complete system including all Waterstop, stainless steel anchoring hardware, and epoxy for installation.
- F. For construction joints, retrofit waterstop shall be style number 609 by Sika Greenstreak, RF-638 by BoMetals, Inc., Type 18 kit by DuraJoint Concrete Accessories, or approved equal. For expansion joints, retrofit waterstop shall be style number 667 by Sika Greenstreak, RF-912 by BoMetals, Inc., Type 18-9 kit by DuraJoint Concrete Accessories, or approved equal.

#### 2.03 HYPALON RUBBER WATERSTOPS

- A. Hypalon rubber waterstops shall be Sikadur Combiflex by Sika Corporation or approved equal. Minimum width of waterstop material shall be twelve (12) inches unless shown otherwise on Contract Drawings.

#### 2.04 EXPANDING RUBBER WATERSTOP

- A. Expanding rubber shall be designed to expand under hydrostatic conditions. Waterstops shall be Adeka Ultra Seal MC-2010MN by Adeka Ultra Seal/OCM, Inc., or Hydrotite CJ-1020-2K by Sika Greenstreak, for concrete thickness greater than nine inches. For thicknesses less than nine inches, Adeka Ultra Seal KBA-1510FF or Hydrotite CJ-1020-2K shall be used.
- B. Waterstop shall be a chemically modified natural rubber product with a hydrophilic agent.
- C. Waterstop has a stainless steel mesh or coextrusion of non-hydrophilic rubber to direct expansion in the thickness direction and restrict the expansion in the longitudinal direction.

#### 2.05 WATERSTOP ADHESIVE

- A. Adhesive between waterstops and existing concrete shall be Neoprene Adhesive 77-198 by JGF Adhesives, Sikadur 31 Hi-Mod Gel by Sika Corporation, DP-605 NS Urethane Adhesive by 3M Adhesive Systems.
- B. Hydrophilic, non-bentonite water swelling elastic sealant shall be used to bond expanding rubber waterstops to rough surfaces. Hydrophilic elastic sealant shall be P-201 by Adeka Ultra Seal/OCM, Inc., Leakmaster LV-1 by Sika Greenstreak, or approved equal.

#### 2.06 JOINT SEALANTS

- A. Joint sealants shall comply with Section 07900, Joint Fillers, Sealants, and Caulking.

#### 2.07 EXPANSION JOINT MATERIAL

- A. Preformed expansion joint material shall be non-extruding, and shall be of the following types:
  1. Type I - Sponge rubber, conforming to ASTM D1752, Type I.

2. Type II - Cork, conforming to ASTM D1752, Type II.
3. Type III - Self-expanding cork, conforming to ASTM D1752, Type III.
4. Type IV - Bituminous fiber, conforming to ASTM Designation D1751.

#### 2.08 EXPANSION JOINT SEAL

- A. Expansion Joint Seal System shall consist of a preformed neoprene profile, installed using the same dimensions as the joint gap, bonded with a two-component epoxy adhesive and pressurized during the adhesive cure time.
- B. The expansion joint system shall be Hydrozo/Jeene Structural Sealing joint system by Hydrozo/Jeene, Inc.

#### 2.09 EPOXY BONDING AGENT

- A. Epoxy bonding agent shall conform to ASTM C881 and shall be Sikadur 32 Hi-Mod, Sika Corporation, Lyndhurst, N.J.; Euco #452 Epoxy System, Euclid Chemical Company, Cleveland, OH, MasterInject 1500 by BASF Master Builder Solutions (BASF).

#### 2.10 EPOXY RESIN BINDER

- A. Epoxy resin binder shall conform to the requirements of ASTM C-881, Type III, Grade 3, Class B and C for epoxy resin binder and shall be Sikadur 23, Low-Mod-Gel, manufactured by the Sika Corporation, Lyndhurst, N.J., Flexocrete Gel manufactured by DuraJoint Concrete Accessories or Euco #352 Gel, Euclid Chemical Company, MasterEmaco ADH 327 or 327 RS by BASF Master Builder Solutions.

### PART 3 -- EXECUTION

#### 3.01 PVC WATERSTOPS

- A. PVC waterstops shall be provided in all construction and expansion joints in water bearing structures and at other such locations as required by the Drawings.
- B. Waterstops shall be carefully positioned so that they are embedded to an equal depth in concrete on both sides of the joint. They shall be kept free from oil, grease, mortar or other foreign matter. To ensure proper placement, all waterstops shall be secured in correct position at 12" on center along the length of the waterstop on each side, prior to placing concrete. Such method of support shall be submitted to the Engineer for review and approval. Grommets or small pre-punched holes as close to the edges as possible will be acceptable for securing waterstops.
- C. Splices in PVC waterstops shall be made with a thermostatically controlled heating element. Only straight butt joint splices will be allowed in the field. Factory fabricated corners and transitions shall be used at all intersections. Splices shall be made in strict accordance with the manufacturer's recommended instructions and procedures. At least three satisfactory sample splices shall be made on the site. The Engineer may require tests on these splices by an approved laboratory. The splices shall exhibit not less than 80 percent of the strength of the unspliced material.

- D. All splices in waterstops will be subject to rigid review for misalignment, bubbles, inadequate bond, porosity, cracks, offsets, discoloration, charring, and other defects which would reduce the potential resistance of the material to water pressure at any point. All defective joints shall be replaced with material which will pass said review and all faulty material shall be removed from the site and disposed of by the Contractor at no additional cost to the Owner.
- E. Retrofit waterstops shall be installed as shown on Contract Drawings using approved waterstop adhesive and Type 316 stainless steel batten bars and expansion anchors.
- F. Waterstop installation and splicing defects which are unacceptable include, but are not limited to the following:
  - 1. Tensile strength not less than 80 percent of parent material.
  - 2. Overlapped (not spliced) Waterstop.
  - 3. Misalignment of Waterstop geometry at any point greater than 1/16 inch.
  - 4. Visible porosity or charred or burnt material in weld area.
  - 5. Visible signs of splice separation when splice (24 hours or greater) is bent by hand at sharp angle.

### 3.02 HYPALON RUBBER AND EXPANDING RUBBER WATERSTOPS

- A. Waterstops shall be installed only where shown on the Drawings.
- B. Waterstops shall be installed in strict accordance with manufacturer's recommendations.

### 3.03 WATERSTOP ADHESIVE

- A. Adhesive shall be applied to both contact surfaces in strict accordance with manufacturer's recommendations.
- B. Adhesive shall be used where waterstops are attached to existing concrete surfaces.

### 3.04 INSTALLATION OF EXPANSION JOINT MATERIAL AND SEALANTS

- A. Type I, II, or III shall be used in all expansion joints in structures and concrete pavements unless specifically shown otherwise on the Drawings. Type IV shall be used in sidewalk and curbing and other locations specifically shown on the Drawings.
- B. All expansion joints exposed in the finish work, exterior and interior, shall be sealed with the specified joint sealant. Expansion joint material and sealants shall be installed in accordance with manufacturer's recommended procedures and as shown on the Drawings.
- C. Expansion joint material that will be exposed after removal of forms shall be cut and trimmed to ensure a neat appearance and shall completely fill the joint except for the space required for the sealant. The material shall be held securely in place and no concrete shall be allowed to enter the joint or the space for the sealant and destroy the proper functions of the joint.
- D. A bond breaker shall be used between expansion joint material and sealant. The joint shall be thoroughly clean and free from dirt and debris before the primer and the sealant are

applied. Where the finished joint will be visible, masking of the adjoining surfaces shall be carried out to avoid their discoloration. The sealant shall be neatly tooled into place and its finished surfaces shall present a clean and even appearance.

- E. Type 1 joint sealant shall be used in all expansion and contraction joints in concrete, except where Type 7 or Type 8 is required as stated below, and wherever else specified or shown on the Drawings. It shall be furnished in pour grade or gun grade depending on installation requirements. Primers shall be used as required by the manufacturer. The sealant shall be furnished in colors as directed by the Engineer.
- F. Type 8 joint sealant shall be used in all concrete pavements and floors subject to heavy traffic and wherever else specified or shown on the Drawings.
- G. Type 7 joint sealant shall be used for all joints in chlorine contact tanks and wherever specified or shown on the Drawings.

### 3.05 EXPANSION JOINT SEAL

- A. The expansion joint seal system shall be installed as shown on the Drawings in strict accordance with the manufacturer's recommendations.

### 3.06 EPOXY BONDING AGENT

- A. The Contractor shall use an epoxy bonding agent for bonding fresh concrete to existing concrete as shown on the Drawings.
- B. Bonding surface shall be clean, sound and free of all dust, laitance, grease, form release agents, curing compounds, and any other foreign particles.
- C. Application of bonding agent shall be in strict accordance with manufacturer's recommendations.
- D. Fresh concrete shall not be placed against existing concrete if epoxy bonding agent has lost its tackiness.

### 3.07 EPOXY RESIN BINDER

- A. Epoxy resin binder shall be used to seal all existing rebar cut and burned off during demolition operations. Exposed rebar shall be burned back 1/2-inch minimum into existing concrete and the resulting void filled with epoxy resin binder.

- END OF SECTION -

SECTION 03290

JOINTS IN CONCRETE

PART 1 -- GENERAL

1.01 THE REQUIREMENTS

- A. Provide all materials, labor and equipment required for the construction of all joints in concrete specified herein and shown on the Drawings.
- B. Types of joints in concrete shall be as follows:
  - 1. Construction Joints - Joints between adjacent concrete placements continuously connected with reinforcement.
  - 2. Expansion Joints - Joints in concrete which allow thermal expansion and contraction of concrete. Reinforcement terminates within concrete on each side of joint.
  - 3. Contraction Joints - Joints formed in concrete to provide a weakened plane in concrete section to control formation of shrinkage cracks.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03100 - Concrete Formwork
- B. Section 03250 - Concrete Accessories
- C. Section 03300 - Cast-in-Place Concrete
- D. Section 07900 - Joint Fillers, Sealants and Caulking

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.
  - 1. ACI 301 - Specifications for Structural Concrete for Buildings
  - 2. ACI 318 - Building Code Requirements for Structural Concrete
  - 3. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures
  - 4. ACI 224.3 - Joints in Concrete Construction

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals.

1. Layout drawings showing location and type of all joints to be placed in each structure.
2. Details of proposed joints in each structure.

## PART 2 -- MATERIALS

### 2.01 MATERIALS

- A. All materials required for joint construction shall comply with Section 03250 - Concrete Accessories, and Section 07900 - Joint Fillers, Sealants and Caulking.

## PART 3 -- EXECUTION

### 3.01 CONSTRUCTION JOINTS

- A. Construction joints shall be as shown on the Drawings. Otherwise, Contractor shall submit description of the joint and its location to Engineer for approval.
- B. Unless noted otherwise on the Drawings, construction joints shall be located near the middle of the spans of slabs, beams, and girders unless a beam intersects a girder at this point. In this case, the joints in the girders shall be offset a distance equal to twice the width of the beam. Joints in walls and columns shall be at the underside of floors, slabs, beams, or girders and the top of footings or floor slabs unless noted otherwise on Drawings. Beams, girders, brackets, column capitals, haunches, and drop panels shall be placed at the same time as slabs. Joints shall be perpendicular to the main reinforcement.
- C. Maximum distance between horizontal joints in slabs and vertical joints in walls shall be 45'-0". For exposed walls with fluid or earth on the opposite side, the spacing between vertical and horizontal joints shall be a maximum of 25'-0".
- D. All corners shall be part of a continuous placement, and should a construction joint be required, the joint shall not be located closer than five feet from a corner.
- E. All reinforcing steel and welded wire fabric shall be continued across construction joints. Keys and inclined dowels shall be provided as shown on the Drawings or as directed by the Engineer. Longitudinal keys shall be provided in all joints in walls and between walls and slabs or footings, except as specifically noted otherwise on the Drawings. Size of keys shall be as shown on the Drawings.
- F. All joints in water bearing structures shall have a waterstop. All joints below grade in walls or slabs which enclose an accessible area shall have a waterstop.

### 3.02 EXPANSION JOINTS

- A. Size and location of expansion joints shall be as shown on the Drawings.
- B. All expansion joints in water-bearing structures shall have a center-bulb type waterstop. All expansion joints below grade in walls or slabs which enclose an accessible area shall have a center-bulb type waterstop. Waterstop shall be as shown on Drawings and specified in Section 03250, Concrete Accessories.

3.03 JOINT PREPARATION

- A. No concrete shall be allowed to enter the joint or the space for the sealant and destroy the proper functions of the joint.
- B. The surface of the concrete at all joints shall be thoroughly cleaned and all laitance removed by wire brushing, air or light sand blasting.
- C. The joint shall be thoroughly clean and free from dirt and debris before the primer and the sealant are applied. Where the finished joint will be visible, masking of the adjoining surfaces shall be carried out to avoid their discoloration. The sealant shall be neatly tooled into place and its finished surface shall present a clean and even appearance.
- D. All joints shall be sealed as shown on the Drawings and specified in Section 03250, Concrete Accessories.

- END OF SECTION -



THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Provide all labor, equipment, materials and services necessary for the manufacture, transportation and placement of all plain and reinforced concrete work, as shown on the Drawings or as ordered by the Engineer.
- B. The requirements in this section shall apply to the following types of concrete:
  - 1. Class A1 Concrete: Normal weight structural concrete to be used in all structures qualifying as environmental concrete structures that are designed in accordance with ACI 350 including pump stations, tanks, basins, process structures, and any structures containing fluid or process chemicals or other materials used in treatment process.
  - 2. Class A4 Concrete: Normal weight structural concrete to be used where specifically called for on Contract Drawings or areas where specifically requested by Contractor and approved by Engineer. Class A4 concrete is identical to Class A1 concrete except that coarse aggregate specified in Article 2.05 below shall be Size #8 in accordance with ASTM C33.
  - 3. Class B Concrete: Normal weight structural concrete used for duct bank encasements, catch basins, fence and guard post embedment, concrete fill, and other areas where specifically noted on Contract Drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03100 - Concrete Formwork
- B. Section 03200 - Reinforcing Steel
- C. Section 03250 - Concrete Accessories
- D. Section 03290 - Joints in Concrete
- E. Section 03350 - Concrete Finishes
- F. Section 03370 - Concrete Curing
- G. Section 03600 - Grout

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the Specifications, all work herein shall conform to or exceed the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.

1. Kentucky Building Code
2. ACI 214 Guide to Evaluation of Strength Test Results of Concrete
3. ACI 301 Specifications for Structural Concrete
4. ACI 304 Guide for Measuring, Mixing, Transporting, and Placing Concrete
5. ACI 305 Guide to Hot Weather Concreting
6. ACI 306 Guide to Cold Weather Concreting
7. ACI 309 Guide for Consolidation of Concrete
8. ACI 318 Building Code Requirements for Structural Concrete and Commentary
9. ACI 350 Code Requirements for Environmental Engineering Concrete Structures
10. ASTM C 31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
11. ASTM C 33 Standard Specification for Concrete Aggregates
12. ASTM C 39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
13. ASTM C 42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
14. ASTM C 88 Standard Test Method for Soundness of Aggregates by use of Sodium Sulfate or Magnesium Sulfate
15. ASTM C 94 Standard Specification for Ready-Mixed Concrete
16. ASTM C 114 Standard Test Method for Chemical Analysis of Hydraulic Cement
17. ASTM C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
18. ASTM C 138 Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
19. ASTM C 143 Standard Test Method for Slump of Hydraulic Cement Concrete
20. ASTM C 150 Standard Specification for Portland Cement
21. ASTM C 172 Standard Practice for Sampling Freshly Mixed Concrete
22. ASTM C 192 Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory

- |     |             |   |
|-----|-------------|---|
| 23. | ASTM C 231  | Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method   |
| 24. | ASTM C 260  | Standard Specification for Air-Entraining Admixtures for Concrete   |
| 25. | ASTM C 295  | Standard Guide for Petrographic Examination of Aggregates for Concrete  |
| 26. | ASTM C 457  | Standard Test Method for Microscopical Determination of the Air-Void System in Hardened Concrete  |
| 27. | ASTM C 494  | Standard Specification for Chemical Admixtures for Concrete   |
| 28. | ASTM C 595  | Standard Specification for Blended Hydraulic Cements  |
| 29. | ASTM C 618  | Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete  |
| 30. | ASTM C 989  | Standard Specification for Slag Cement for Use in Concrete and Mortars  |
| 31. | ASTM C 1077 | Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation                          |
| 32. | ASTM C 1260 | Test Method for Potential Alkali Reactivity of Aggregates (Mortar Bar Method)   |
| 33. | ASTM C 1567 | Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method) |
| 34. | ASTM C 1602 | Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete   |
| 35. | ASTM C 1778 | Reducing the Risk of Deleterious Alkali – Aggregate Reaction in Concrete  |

**1.04 SUBMITTALS**

A. Submit the following in accordance with Section 01300, Submittals.

1. Sources of all materials and certifications of compliance with specifications for all materials.
2. Certified current (less than 1 year old) chemical analysis of the Portland Cement or Blended Cement to be used.
3. Certified current (less than 1 year old) chemical analysis of fly ash or slag cement to be used.

4. Aggregate test results showing compliance with required standards, i.e., sieve analysis, potential reactivity, aggregate soundness tests, petrographic analysis, mortar bar expansion testing, etc.
5. Manufacturer's data on all admixtures stating compliance with required standards.
6. Concrete mix design for each class of concrete specified herein.
7. Field experience records and/or trial mix data for the proposed concrete mixes for each class of concrete specified herein.

#### 1.05 QUALITY ASSURANCE

- A. Tests on materials used in the production of concrete shall be required as specified in PART 2 -- PRODUCTS. These tests shall be performed by an independent testing laboratory approved by the Engineer at no additional cost to the Owner.
- B. Trial concrete mixes shall be tested when required in accordance with Article 3.01 at no additional cost to the Owner.
- C. Field quality control tests, as specified in Article 3.09, unless otherwise stated, will be performed by a materials testing consultant employed and paid for by the Contractor. The Contractor will also be charged for the cost of any additional tests and investigation on work performed which does not meet the Specifications. Any individual who samples and tests concrete to determine if the concrete is being produced in accordance with this Specification shall be certified as a Concrete Field Testing Technician, Grade I, in accordance with ACI CP-2. Testing laboratory shall conform to requirements of ASTM C-1077.
- D. The Contractor's testing firm shall be a submittal to the project and approved by the Engineer and Owner prior to testing.

#### 1.06 CONCRETE COORDINATION CONFERENCE

- A. Unless waived by the Engineer, prior to any concrete submittals and at least 35 days prior to the start of the concrete construction schedule, the Contractor shall conduct a meeting at the site. The purpose of the meeting is to review the proposed concrete mix designs, to discuss the proposed approaches and procedures for mixing, transporting, placing, testing, finishing, and curing of all aspects of concrete work to ensure the concrete construction is performed in accordance with the Specifications, and to clarify roles of the parties involved. The Contractor shall send a concrete coordination conference agenda to all attendees 20 days prior to a mutually agreed upon date for the conference.
- B. As a minimum the agenda shall include:
  1. Concrete Materials and Mix Designs
  2. Inspection Responsibilities
  3. Concrete Sampling and Testing Specification Requirements
  4. Cylinder Storage and Transportation
  5. Acceptance/Rejection Responsibility and Authority for Fresh Concrete

6. Concrete finishing
  7. Concrete Curing
  8. Test Report Distribution
  9. Miscellaneous Items
- C. The Contractor shall require responsible representatives of every party who is concerned with the concrete work to attend the conference, including but not limited to the following:
1. Contractor's superintendent
  2. Engineer
  3. Owner's representative (if he chooses to attend)
  4. Laboratory retained for trial batching and construction quality control testing for the concrete.
  5. Any subcontractors involved in placing, finishing, and curing of concrete
  6. Concrete supplier
  7. Concrete pumping subcontractor (if pumping is being proposed)
- D. Minutes of the meeting shall be recorded, typed, and printed by the Contractor and distributed to all attendees and any other concerned parties within five days of the meeting.

## PART 2 -- PRODUCTS

### 2.01 HYDRAULIC CEMENT

#### A. Portland Cement

1. Portland Cement shall be Type II conforming to ASTM C 150. Type I cement may be used provided either fly ash or slag cement is also included in the mix in accordance with Articles 2.02 or 2.03 respectively.
2. When potentially reactive aggregates as defined in Article 2.05 are to be used in concrete mix, cement shall meet the following requirements:
  - a. For concrete mixed with only Portland Cement, the total alkalis in the cement (calculated as the percentage of  $Na_2O$  plus 0.658 times the percentage of  $K_2O$ ) shall not exceed 0.40%.
  - b. For concrete mixed with Portland Cement and an appropriate amount of fly ash (Article 2.02) or slag cement (Article 2.03) the total alkalis in the Portland Cement (calculated as the percentage of  $Na_2O$  plus 0.658 times the percentage of  $K_2O$ ) shall not exceed 0.85%.

3. When non-reactive aggregates as defined in Article 2.05 are used in concrete mix, total alkalis in the cement shall not exceed 1.0%.
4. The proposed Portland Cement shall not contain more than 8% tricalcium aluminate and more than 12% tetracalcium aluminoferrite.

B. Blended Cement

1. Blended cements shall be Type IP (Portland Fly Ash Cement) or Type IS (Portland Slag Cement) conforming to ASTM C 595.
  2. Type IP cement shall be an interground blend of Portland Cement and fly ash in which the fly ash constituent is between 15% and 25% of the weight of the total blend.
  3. Type IS cement shall be an interground blend of Portland Cement and slag cement in which the slag constituent is between 35% and 50% of the weight of the total blend.
  4. Fly ash and slag cement used in the production of blended cements shall meet the requirements of Articles 2.02 and 2.03, respectively.
  5. When reactive aggregates as defined in Article 2.05 are used in concrete mix, the total alkalis in the Portland Cement (calculated as the percentage of  $\text{Na}_2\text{O}$  plus 0.658 times the percentage of  $\text{K}_2\text{O}$ ) shall not exceed 0.85%. The percentage of fly ash or slag cement shall be set to meet provisions of Article 2.05.G.2.
- C. Different types of cement shall not be mixed nor shall they be used alternately except when authorized in writing by the Engineer. Different brands of cement or the same brand from different mills may be used alternately. A resubmittal will be required if different cements are proposed during the Project.
- D. Cement shall be stored in a suitable weather-tight building so as to prevent deterioration or contamination. Cement which has become caked, partially hydrated, or otherwise damaged will be rejected.

2.02 FLY ASH

- A. Fly ash shall meet the requirements of ASTM C 618 for Class F, except that the loss on ignition shall not exceed 4%. Fly ash shall also meet the optional physical requirements for uniformity as shown in Table 3 of ASTM C 618.
- B. For fly ash to be used in the production of type IP cement, the Pozzolan Activity Index shall be greater than 75% as specified in Table 3 of ASTM C 595.
- C. Where reactive aggregates as defined in Article 2.05 are used in concrete mix, the fly ash constituent shall be between 15% and 25% of the total weight of the combined Portland Cement and fly ash. The percentage of fly ash shall be set to meet the mean mortar bar expansion requirements in provisions of Article 2.05.G.2.
- D. For Type A1 concrete as required for use in environmental concrete structures, i.e. process structures or fluid containing structures, inclusion of fly ash or slag cement in the concrete mix, is mandatory.

- E. Additional fly ash shall not be included in concrete mixed with Type IS or IP cement.

#### 2.03 SLAG CEMENT

- A. Slag cement shall meet the requirements of ASTM C 989 including tests for effectiveness of slag in preventing excessive expansion due to alkali-aggregate reactivity as described in Appendix X-3 of ASTM C 989.
- B. Where reactive aggregates as defined in Article 2.05 are used in concrete mix, the slag cement constituent shall be between 35% and 40% of the total weight of the combined Portland Cement and slag. The percentage of slag cement shall be set to meet the mean mortar bar expansion requirements in provisions of Article 2.05.G.2.
- C. For Type A1 concrete as required for use in environmental concrete structures, i.e. process structures or fluid containing structures, inclusion of fly ash or slag cement in the concrete mix, is mandatory.
- E. Additional slag cement shall not be included in concrete mixed with type IS or IP cement.

#### 2.04 WATER

- A. Water used for mixing concrete shall be clear, potable and free from deleterious substances such as objectionable quantities of silty organic matter, alkali, salts and other impurities.
- B. Water shall not contain more than 100 PPM chloride.
- C. Water shall not contain more than 500 PPM dissolved solids.
- D. Water shall have a pH in the range of 4.5 to 8.5.
- E. Water shall meet requirements of ASTM C 1602.

#### 2.05 AGGREGATES

- A. All aggregates used in normal weight concrete shall conform to ASTM C 33.
- B. Fine Aggregate (Sand) in the various concrete mixes shall consist of natural or manufactured siliceous sand, clean and free from deleterious substances, and graded within the limits of ASTM C 33.
- C. Coarse aggregates shall consist of hard, clean, durable gravel, crushed gravel or crushed rock. Coarse aggregate shall be size #57 or #67 as graded within the limits given in ASTM C 33 unless otherwise specified.
- D. For Class A4 concrete, coarse aggregate shall be Size #8 in accordance with ASTM C33.
- E. Aggregates shall be tested for gradation by sieve analysis tests in conformance with ASTM C 136.
- F. Aggregates shall be tested for soundness in accordance with ASTM C 88. The loss resulting after five cycles shall not exceed 10 percent for fine or coarse aggregate when using either magnesium sulfate or sodium sulfate.



G. All aggregates shall be evaluated in accordance with ASTM C 1778 to determine potential reactivity. All aggregates shall be considered reactive unless they meet the requirements below for non-reactive aggregates. Aggregates with a lithology essentially similar to sources in the same region found to be reactive in service shall be considered reactive regardless of the results of the tests above.

1. Non-reactive aggregates shall meet the following requirements:

A petrographic analysis in accordance with ASTM C295 shall be performed to identify the constituents of the fine and coarse aggregate. Non-reactive aggregates shall meet the following limitations:

- (a) Optically strained, microfractured, or microcrystalline quartz, 5.0%, maximum.
- (b) Chert or chalcedony, 3.0%, maximum.
- (c) Tridymite or cristobalite, 1.0%, maximum.
- (d) Opal, 0.5%, maximum.
- (e) Natural volcanic glass in volcanic rocks, 3.0%, maximum.

2. Concrete mixed with reactive aggregates shall meet the following requirements:

- (a) If aggregates are deemed potentially reactive as per ASTM C-1778 and fly ash or slag cement is included in proposed concrete mix design, proposed concrete mix including proposed aggregates shall be evaluated by ASTM C-1567. Mean mortar bar expansions at 16 days shall be less than 0.08%. Tests shall be made using exact proportion of all materials proposed for use on the job in design mix submitted.
- (b) If aggregates are deemed potentially reactive as per ASTM C-1778 and a straight cement mix without fly ash or slag cement is proposed for concrete mix design, aggregates shall be evaluated by ASTM C-1260. Mean mortar bar expansions at 16 days shall be less than 0.08%.

H. Contractor shall submit a new trial mix to the Engineer for approval whenever a different aggregate or gradation is proposed.

## 2.06 ADMIXTURES

A. Air entraining agent shall be added to all concrete unless noted otherwise. The agent shall consist of a neutralized vinsol resin solution or a purified hydrocarbon with a cement catalyst which will provide entrained air in the concrete in accordance with ASTM C 260. The admixture proposed shall be selected in advance so that adequate samples may be obtained and the required tests made. Air content of concrete, when placed, shall be within the ranges given in the concrete mix design.

B. The following admixtures are required or used for water reduction, slump increase, and/or adjustment of initial set. Admixtures permitted shall conform to the requirements of ASTM C 494. Admixtures shall be non-toxic after 30 days and shall be compatible with and made by the same manufacturer as the air-entraining admixtures.

1. Water reducing admixture shall conform to ASTM C 494, Type A and shall contain no more than 0.05% chloride ions. Acceptable products are "Eucon Series" by the Euclid Chemical Company, "Master Pozzoloth Series" by BASF, and "Plastocrete Series" by Sika Corporation.
  2. High range water reducer shall be sulfonated polymer conforming to ASTM C 494, Type F or G. The high range water reducer shall be added to the concrete at either the batch plant or at the job site and may be used in conjunction with a water reducing admixture. The high range water reducer shall be accurately measured and pressure injected into the mixer as a single dose by an experienced technician. A standby system shall be provided and tested prior to each day's operation of the job site system. Concrete shall be mixed at mixing speed for a minimum of 100 mixer revolutions after the addition of the high range water reducer. Acceptable products are "Eucon 37" or Plastol 5000 by the Euclid Chemical Company, "Master Rheobuild 1000 or Master Glenium Series" by BASF, and "Daracem 100 or Advaflow Series" by W.R. Grace.
  3. A non-chloride, non-corrosive accelerating admixture may be used where specifically approved by the Engineer. The admixture shall conform to ASTM C 494, Type C or E, and shall not contain more chloride ions than are present in municipal drinking water. The admixture manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least a year's duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures. Acceptable products are "Accelguard 80/90 or NCA" by the Euclid Chemical Company and "Daraset" by W.R. Grace.
  4. A water reducing retarding admixture may be used where specifically approved by the Engineer. The admixture shall conform to ASTM C494, Type D and shall not contain more than 0.05% chloride ions. Acceptable products are "Eucon NR or Eucon Retarder 100" by the Euclid Chemical Company, "Pozzoloth Retarder" by BASF, and "Plastiment" by Sika Corporation.
- C. Admixtures containing calcium chloride, thiocyanate or more than 0.05 percent chloride ions are not permitted. The addition of admixtures to prevent freezing is not permitted.
- D. The Contractor shall submit manufacturer's data including the chloride ion content of each admixture and certification from the admixture manufacturer that all admixtures utilized in the design mix are compatible with one another and properly proportioned prior to mix design review.

## 2.07 CONCRETE MIX DESIGN

- A. The proportions of cement, aggregates, admixtures and water used in the concrete mixes shall be based on the results of field experience or preferably laboratory trial mixes in conformance with Section 5.3. "Proportioning on the Basis of Field Experience and/or Trial Mixtures" of ACI 318 and ACI 350. When trial mixes are used they shall also conform to Article 3.01 of this Section of the Specifications. If field experience records are used, concrete strength results shall be from concrete mixed with all of the ingredients proposed for use on job used in similar proportions to mix proposed for use on job. Contractor shall submit verification confirming this stipulation has been followed. Field experience records and/or trial mix data used as the basis for the proposed concrete mix design shall be submitted to the Engineer along with the proposed mix.

B. Structural concrete shall conform to the following requirements. Cementitious materials refer to the total combined weight of all cement, fly ash, and slag cement contained in the mix.

1. Compressive Strength (28-Day)

- a. Concrete Class A1                      4,500 psi (minimum)
- b. Concrete Class A4                      4,500 psi (minimum)
- c. Concrete Class B                        3,000 psi (minimum)

2. Water/cementitious materials ratio, by weight

	Maximum	Minimum
a. Concrete Class A1	0.42	0.39
b. Concrete Class A4	0.45	0.39
c. Concrete Class B	0.50	0.39

3. Slump range    4" nominal unless high range water reducing admixture is used.  
8" max if high range water reducing admixture is used.

4. Air Content

- a. Class A1, A4                                      6% ±1.5%
- b. Class B    3% Max (non air-entrained)

PART 3 -- EXECUTION

3.01 TRIAL MIXES

A. When trial mixes are used to confirm the quality of a proposed concrete mix in accordance with Section 5.3, "Proportioning on the Basis of Field Experience and/or Trial Mixtures" of ACI 318 and ACI 350, an independent qualified testing laboratory designated and retained by the Contractor shall test a trial batch of each of the preliminary concrete mixes submitted by the Contractor. The trial batches shall be prepared using the aggregates, cement and admixtures proposed for the project. The trial batch materials shall be of a quantity such that the testing laboratory can obtain enough samples to satisfy requirements stated below. Tests on individual materials stated in PART 2 -- PRODUCTS should already be performed before any trial mix is done. The cost of laboratory trial batch tests for each specified concrete mix will be borne by the Contractor and the Contractor shall furnish and deliver the materials to the testing laboratory at no cost to the Owner.

B. The independent testing laboratory shall prepare a minimum of fifteen (15) standard test cylinders in accordance with ASTM C 31 in addition to conducting slump (ASTM C 143), air content (C 231) and unit weight (C 138) tests. Compressive strength test on the cylinders shall subsequently be performed by the same laboratory in accordance with ASTM C 39 as follows: Test 3 cylinders at age 7 days; test 3 cylinders at age 21 days; test 3 cylinders at age 28 days and test 3 cylinders at 56 days. The cylinders shall be carefully identified as "Trial Mix, Contract No. \_\_\_\_\_, Product \_\_\_\_\_." If the average 28-day compressive strength of the trial mix is less than that specified, or if any single cylinder falls below the

required strength by more than 500 psi, the mix shall be corrected, another trial batch prepared, test cylinders taken, and new tests performed as before. Any such additional trial batch testing required shall be performed at no additional cost to the Owner. Adjustments to the mix shall be considered refinements to the mix design and shall not be the basis for extra compensation to the Contractor.

### 3.02 PRODUCTION OF CONCRETE

- A. All concrete shall be machine mixed. Hand mixing of concrete will not be permitted. The Contractor may supply concrete from a ready mix plant or from a site mixed plant. In selecting the source for concrete production the Contractor shall carefully consider its capability for providing quality concrete at a rate commensurate with the requirements of the placements so that well bonded, homogenous concrete, free of cold joints, is assured.
- B. Ready-Mixed Concrete
1. At the Contractor's option, ready-mixed concrete may be used meeting the requirements for materials, batching, mixing, transporting, and placing as specified herein and in accordance with ASTM C 94.
  2. Truck mixers shall be equipped with electrically-actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the resettable, recording type, and shall be mounted in the driver's cab. The counters shall be actuated at the time of starting mixers at mixing speeds.
  3. Each batch of concrete shall be mixed in a truck mixer for not less than 100 revolutions of the drum or blades at the rate of rotation designated by the manufacturer of equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. All materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolutions of mixing.
  4. Truck mixers and their operation shall be such that the concrete throughout the mixed batch, as discharged, is within acceptable limits of uniformity with respect to consistency, mix and grading. If slump tests taken at approximately the 1/4 and 3/4 points of the load during discharge give slumps differing by more than one inch when the specified slump is 3 inches or less, or if they differ by more than 2 inches when the specified slump is more than 3 inches, the mixer shall not be used on the work unless the causing condition is corrected and satisfactory performance is verified by additional slump tests. All mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed of rotation, general mechanical condition of the unit and clearance of the drum, shall be checked before a further attempt to use the unit will be permitted.
  5. Ready-mixed concrete shall be delivered to the site for the work and discharge shall be completed before the drum has been revolved 300 revolutions and within the time requirements stated in Article 3.03 of this Section.
  6. Each and every concrete delivery shall be accompanied by a delivery ticket containing at least the following information:
    - a. Date and truck number
    - b. Ticket number

- c. Mix designation of concrete
  - d. Cubic yards of concrete
  - e. Cement brand, type and weight in pounds
  - f. Weight in pounds of fine aggregate (sand)
  - g. Weight in pounds of coarse aggregate (stone)
  - h. Air entraining agent, brand, and weight in pounds and ounces
  - i. Other admixtures, brand, and weight in pounds and ounces
  - j. Water, in gallons, stored in attached tank
  - k. Water, in gallons, maximum that can be added without exceeding design water/cementitious materials ratio
  - l. Water, in gallons, actually used (by truck driver)
  - m. Time of loading
  - n. Time of delivery to job (by truck driver)
7. Any truck delivering concrete to the job site, which is not accompanied by a delivery ticket showing the above information will be rejected and such truck shall immediately depart from the job site.
8. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by the Engineer.

C. Site Mixed Concrete

1. Scales for weighing concrete ingredients shall be accurate when in use within  $\pm 0.4$  percent of their total capacities. Standard test weights shall be available to permit checking scale accuracy.
2. Operation of batching equipment shall be such that the concrete ingredients are consistently measured within the following tolerances:
- a. Cement, fly ash, or slag cement  $\pm 1$  percent
  - b. Water  $\pm 1$  percent
  - c. Aggregates  $\pm 2$  percent
  - d. Admixtures  $\pm 3$  percent
3. Each batch shall be so charged into the mixer that some water will enter in advance of the cement and aggregates. Water shall continue for a period which may extend to the end of the first 25 percent of the specified mixing time. Controls shall be provided to prevent batched ingredients from entering the mixer before the previous batch has been completely discharged.
4. The concrete shall be mixed in a batch mixer capable of thoroughly combining the aggregates, cement, and water into a uniform mass within the specified mixing time, and of discharging the concrete without harmful segregation. The mixer shall bear a manufacturer's rating plate indicating the rate capacity and the recommended revolutions per minute and shall be operated in accordance therewith.
5. Mixers with a rate capacity of 1 cu.yd. or larger shall conform to the requirements of the Plant Mixer Manufacturers' Division of the Concrete Plant Manufacturers' Bureau.

6. Except as provided below, batches of 1 cu. yd. or less shall be mixed for not less than 1 minute. The mixing time shall be increased 15 seconds for each cubic yard or fraction thereof of additional capacity.
7. Shorter mixing time may be permitted provided performance tests made in accordance with of ASTM C 94 indicate that the time is sufficient to produce uniform concrete.
8. Controls shall be provided to insure that the batch cannot be discharged until the required mixing time has elapsed. At least three-quarters of the required mixing time shall take place after the last of the mixing water has been added.
9. The interior of the mixer shall be free of accumulations that will interfere with mixing action. Mixer blades shall be replaced when they have lost 10 percent of their original height.
10. Air-entraining admixtures and other chemical admixtures shall be charged into the mixer as solutions and shall be measured by means of an approved mechanical dispensing device. The liquid shall be considered a part of the mixing water. Admixtures that cannot be added in solution may be weighed or may be measured by volume if so recommended by the manufacturer.
11. If two or more admixtures are used in the concrete, they shall be added separately to avoid possible interaction that might interfere with the efficiency of either admixture or adversely affect the concrete.
12. Addition of retarding admixtures shall be completed within 1 minute after addition of water to the cement has been completed, or prior to the beginning of the last three-quarters of the required mixing, whichever occurs first. Retarding admixtures shall not be used unless approved by the Engineer.
13. Concrete shall be mixed only in quantities for immediate use and within the time and mixing requirements of ASTM C 94.

### 3.03 CONCRETE PLACEMENT

- A. No concrete shall be placed prior to approval of the concrete mix design. Concrete placement shall conform to the recommendations of ACI 304.
- B. Prior to concrete placement, all reinforcement shall be securely and properly fastened in its correct position. Formwork shall be clean, oiled and form ties at construction joints shall be retightened. All bucks, sleeves, castings, hangers, pipe, conduits, bolts, anchors, wire, and any other fixtures required to be embedded therein shall be in place. Forms for openings to be left in the concrete shall be in place and anchored by the Contractor. All loose debris in bottoms of forms or in keyways shall be removed and all debris, water, snow, ice and foreign matter shall be removed from the space to be occupied by the concrete. The Contractor shall notify the Engineer in advance of placement, allowing sufficient time for a concurrent inspection and for any corrective measures which are subsequently required.
- C. On horizontal joints where concrete is to be placed on hardened concrete, flowing concrete containing a high range water reducing admixture or cement grout shall be placed with a slump not less than 8 inches for the initial placement at the base of the wall. Concrete or cement grout shall meet all strength and service requirements specified herein for applicable

class of concrete. This concrete shall be worked well into the irregularities of the hard surface.

- D. All concrete shall be placed during the daylight hours except with the consent of the Engineer. If special permission is obtained to carry on work during the night, adequate lighting must be provided.
- E. When concrete arrives at the project with slump below that suitable for placing, as indicated by the Specifications, water may be added to bring the concrete within the specified slump range provided that the design water-cementitious materials ratio is not exceeded. The water shall be incorporated by additional mixing equal to at least half of the total mixing required. Water may be added only to full trucks. On-site tempering shall not relieve the Contractor from furnishing a concrete mix that meets all specified requirements.
- F. Concrete shall be conveyed as rapidly as practicable to the point of deposit by methods which prevent the separation or loss of the ingredients. It shall be so deposited that rehandling will be unnecessary. Discharge of the concrete to its point of deposit shall be completed within 90 minutes after the addition of the cement to the aggregates. In hot weather, or under conditions contributing to quick stiffening of the concrete, the time between the introduction of the cement to the aggregates and discharge shall not exceed the requirements stated in Article 3.09 of this Section.
- G. Where concrete is conveyed to position by chutes, a practically continuous flow in the chute shall be maintained. The angle and discharge arrangement of the chute shall be such as to prevent segregation of the concrete ingredients. The delivery end of the chute shall be as close as possible to the point of deposit and in no case shall the free pour from the delivery end of the chute exceed five feet, unless approved otherwise.
- H. Special care must be exercised to prevent splashing of forms or reinforcement with concrete, and any such splashes or accumulations of hardened or partially hardened concrete on the forms or reinforcement above the general level of the concrete already in place must be removed before the work proceeds. Concrete shall be placed in all forms in such way as to prevent any segregation.
- I. Placing of concrete shall be so regulated that the pressure caused by the wet concrete shall not exceed that used in the design of the forms.
- J. All concrete for walls shall be placed through openings in the form spaced at frequent intervals or through tremies (heavy duct canvas, rubber, etc.), equipped with suitable hopper heads. Tremies shall be of variable lengths so the free fall shall not exceed five (5) feet and a sufficient number shall be placed in the form to ensure the concrete is kept level at all times.
- K. When placing concrete which is to be exposed, sufficient illumination shall be provided in the interior of the forms so the concrete, at places of deposit, is visible from deck and runways.
- L. Concrete shall be placed so as to thoroughly embed all reinforcement, inserts, and fixtures.
- M. When forms are removed, surfaces shall be even and dense, free from aggregate pockets or honeycomb. To achieve this, concrete shall be consolidated using mechanical vibration, supplemented by forking and spading by hand in the corners and angle of forms and along form surfaces while the concrete is plastic under the vibratory action. Consolidation shall conform to ACI 309.

- N. Mechanical vibration shall be applied directly to the concrete, unless otherwise approved by the Engineer. The bottom of vibrators used on floor slabs must not be permitted to ride the form supporting the slab. Vibration shall be applied at the point of deposit and in the area of freshly placed concrete by a vertical penetration of the vibrator. Vibrators shall not be used to move concrete laterally within the forms.
- O. The intensity of vibration shall be sufficient to cause settlement of the concrete into place and to produce monolithic joining with the preceding layer. It shall be of sufficient duration to accomplish thorough compaction and complete embedment of reinforcement and fixtures with a vibrator transmitting not less than 7,500 impulses per minute. Since the duration of vibration per square foot of surface is dependent on the frequency (impulses per minute), size of vibrator, and slump of concrete, the length of time must therefore be determined in the field. Vibration, however, shall not be continued in any one location to the extent that pools of grout are formed.
- Q. To prevent featheredges, construction joints located at the tops of horizontal lifts near sloping exposed concrete surfaces shall be inclined near the exposed surface, so the angle between such inclined surface and the exposed concrete surface will be not less than 50°.
- P. Care shall be taken to prevent cold joints when placing concrete in any portion of the work. The concrete placing rate shall be such as to ensure that each layer is placed while the previous layer is soft or plastic, so that the two layers can be made monolithic by penetration of the vibrators. Maximum thickness of concrete layers shall be 18 inches. The surface of the concrete shall be level whenever a run of concrete is stopped.
- Q. To prevent featheredges, construction joints located at the tops of horizontal lifts near sloping exposed concrete surfaces shall be inclined near the exposed surface, so the angle between such inclined surface and the exposed concrete surface will be not less than 50°.
- R. In placing unformed concrete on slopes, the concrete shall be placed ahead of a non-vibrated slip-form screed extending approximately 2-1/2 feet back from its leading edge. The method of placement shall provide a uniform finished surface with the deviation from the straight line less than 1/8 inch in any concrete placement. Concrete ahead of the slip-form screed shall be consolidated by internal vibrators so as to ensure complete filling under the slip-form. Prior to placement of concrete on sloped walls or slabs, the Contractor shall submit a plan specifically detailing methods and sequence of placements, proposed concrete screed equipment, location of construction joints and waterstops, and/or any proposed deviations from the aforementioned to the Engineer for review and approval.
- S. Concrete shall not be placed during rains sufficiently heavy or prolonged to wash mortar from coarse aggregate on the forward slopes of the placement. Once placement of concrete has commenced in a block, placement shall not be interrupted by diverting the placing equipment to other uses.

### 3.04 PLACING FLOOR SLABS ON GRADE

- A. The subgrade for slabs on ground shall be well drained and of adequate and uniform loadbearing nature. The in-place density of the subgrade soils shall be at least the minimum required by the specifications. No foundation, slab, or pavement concrete shall be placed until the depth and character of the foundation soils have been inspected and approved by the materials testing consultant.



- B. The subgrade shall be free of frost before concrete placing begins. If the temperature inside a building where concrete is to be placed is below freezing it shall be raised and maintained above 50° long enough to remove all frost from the subgrade.
- C. The subgrade shall be moist at the time of concreting. If necessary, it shall be dampened with water in advance of concreting, but there shall be no free water standing on the subgrade nor any muddy or soft spots when the concrete is placed.
- D. Thirty-pound felt paper shall be provided between edges of slab-on-grade and vertical and horizontal concrete surfaces, unless otherwise indicated on the Drawings.
- E. Contraction joints shall be provided in slabs-on-grade at locations indicated on the Drawings. Contraction joints shall be installed as per Section 03290 - Joints in Concrete.
- F. Floor slabs shall be screeded level or pitched to drain as indicated on the Drawings. Finishes shall conform with requirements of Section 03350 - Concrete Finishes.

### 3.05 PLACING CONCRETE UNDER PRESSURE

- A. Where concrete is conveyed and placed by mechanically applied pressure, the equipment shall have the capacity for the operation. The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced. To obtain the least line resistance, the layout of the pipeline system shall contain a minimum number of bends with no change in pipe size. If two sizes of pipe must be used, the smaller diameter should be used at the pump end and the larger at the discharge end. When pumping is completed, the concrete remaining in the pipelines, if it is to be used, shall be ejected in such a manner that there will be no contamination of the concrete or separation of the ingredients.
- B. Priming of the concrete pumping equipment shall be with cement grout only. Use of specialty mix pump primers or pumping aids will not be allowed.
- C. No aluminum parts shall be in contact with the concrete during the entire placing of concrete under pressure at any time.
- D. Prior to placing concrete under pressure, the Contractor shall submit the concrete mix design together with test results from a materials testing consultant proving the proposed mix meets all requirements. In addition, an actual pumping test under field conditions is required prior to acceptance of the mix. This test requires a duplication of anticipated site conditions from beginning to end. The batching and truck mixing shall be the same as will be used; the same pump and operator shall be present and the pipe and pipe layouts will reflect the maximum height and distance contemplated. All submissions shall be subject to approval by the Engineer.
- E. If the pumped concrete does not produce satisfactory end results, the Contractor shall discontinue the pumping operation and proceed with the placing of concrete using conventional methods.
- F. The pumping equipment must have two cylinders and be designed to operate with one cylinder only in case the other one is not functioning. In lieu of this requirement, the Contractor may have a standby pump on the site during pumping.
- G. The minimum diameter of the hose (conduits) shall be four inches.

- H. Pumping equipment and hoses (conduits) that are not functioning properly shall be replaced.
- I. Concrete samples for quality control in accordance with Article 3.10 will be taken at the placement (discharge) end of the line.

### 3.06 ORDER OF PLACING CONCRETE

- A. In order to minimize the effects of shrinkage, the concrete shall be placed in units as bounded by construction joints shown on the Drawings and maximum lengths as indicated on Drawings. Where required on the Drawings and wherever else practical, the placing of such units shall be done in a strip pattern in accordance with ACI 302.1. A minimum of 72 hours shall pass prior to placing concrete directly adjacent to previously placed concrete.

### 3.07 CONCRETE WORK IN COLD WEATHER

- A. Cold weather concreting procedures shall conform to the requirements of ACI 306.
- B. The Engineer may prohibit the placing of concrete at any time when air temperature is 40°F. or lower. If concrete work is permitted, the concrete shall have a minimum temperature, as placed, of 55°F. for placements less than 12" thick, 50°F. for placements 12" to 36" thick, and 45°F. for placements greater than 36" thick. The temperature of the concrete as placed shall not exceed the aforementioned minimum values by more than 20°F, unless otherwise approved by the Engineer.
- C. All aggregate and water shall be preheated. Precautions shall be taken to avoid the possibility of flash set when aggregate or water are heated to a temperature in excess of 100°F. in order to meet concrete temperature requirements. The addition of admixtures to the concrete to prevent freezing is not permitted. All reinforcement, forms, and concrete accessories with which the concrete is to come in contact shall be defrosted by an approved method. No concrete shall be placed on frozen ground.

### 3.08 CONCRETE WORK IN HOT WEATHER

- A. Hot weather concreting procedures shall conform to the requirements of ACI 305.
- B. When air temperatures exceed 85°F., or when extremely dry conditions exist even at lower temperatures, particularly if accompanied by high winds, the Contractor and his concrete supplier shall exercise special and precautionary measures in preparing, delivering, placing, finishing, curing and protecting the concrete mix. The Contractor shall consult with the Engineer regarding such measures prior to each day's placing operation and the Engineer reserves the right to modify the proposed measures consistent with the requirements of this Section of the Specifications. All necessary materials and equipment shall be on hand in position prior to each placing operation.
- C. Preparatory work at the job site shall include thorough wetting of all forms, reinforcing steel and, in the case of slab pours on ground or subgrade, spraying the ground surface on the preceding evening and again just prior to placing. No standing puddles of water shall be permitted in those areas which are to receive the concrete.
- D. The temperature of the concrete mix when placed shall not exceed 90°F.
- E. Temperature of mixing water and aggregates shall be carefully controlled and monitored at the supplier's plant, with haul distance to the job site being taken into account. Stockpiled

aggregates shall, if necessary, be shaded from the sun and sprinkled intermittently with water. If ice is used in the mixing water for cooling purposes, it must be entirely melted prior to addition of the water to the dry mix.

- F. Delivery schedules shall be carefully planned in advance so that concrete is placed as soon as practical after it is properly mixed. For hot weather concrete work (air temperature greater than 85°F), discharge of the concrete to its point of deposit shall be completed within 60 minutes from the time the concrete is batched.
- G. The Contractor shall arrange for an ample work force to be on hand to accomplish transporting, vibrating, finishing, and covering of the fresh concrete as rapidly as possible.

### 3.09 QUALITY CONTROL

#### A. Field Testing of Concrete

- 1. The Contractor shall coordinate with the Engineer's project representative the on-site scheduling of the materials testing consultant personnel as required for concrete testing.
- 2. Concrete for testing shall be supplied by the Contractor at no additional cost to the Owner, and the Contractor shall provide assistance to the materials testing consultant in obtaining samples. The Contractor shall dispose of and clean up all excess material.

#### B. Consistency

- 1. The consistency of the concrete will be checked by the materials testing consultant by standard slump cone tests. The Contractor shall make any necessary adjustments in the mix as the Engineer and/or the materials testing consultant may direct and shall upon written order suspend all placing operations in the event the consistency does not meet the intent of the specifications. No payment shall be made for any delays, material or labor costs due to such eventualities.
- 2. Slump tests shall be made in accordance with ASTM C 143. Slump tests will be performed as deemed necessary by the materials testing consultant and each time compressive strength samples are taken.
- 3. Concrete with a specified nominal slump shall be placed having a slump within 1" (higher or lower) of the specified slump. Concrete with a specified maximum slump shall be placed having a slump less than the specified slump.

#### C. Unit Weight

- 1. Samples of freshly mixed concrete shall be tested for unit weight by the materials testing consultant in accordance with ASTM C 138.
- 2. Unit weight tests will be performed as deemed necessary by the Engineer and each time compressive strength samples are taken.

D. Air Content

1. Samples of freshly mixed concrete will be tested for entrained air content by the materials testing consultant in accordance with ASTM C 231.
2. Air content tests will be performed as deemed necessary by the materials testing consultant and each time compressive strength samples are taken.
3. In the event test results are outside the limits specified, additional testing shall occur. Admixture quantity adjustments shall be made immediately upon discovery of incorrect air entrainment.

E. Compressive Strength

1. Samples of freshly mixed concrete will be taken by the materials testing consultant and tested for compressive strength in accordance with ASTM C 172, C 31 and C 39, except as modified herein.
2. In general, one sampling shall be taken for each placement in excess of five (5) cubic yards, with a minimum of one (1) sampling for each day of concrete placement operations, or for each one hundred (100) cubic yards of concrete, or for each 5,000 square feet of surface area for slabs or walls, whichever is greater.
3. Each sampling shall consist of at least five (5) 6x12 cylinders or (8) 4x8 cylinders. Each cylinder shall be identified by a tag, which shall be hooked or wired to the side of the container. The materials testing consultant will fill out the required information on the tag, and the Contractor shall satisfy himself that such information shown is correct.
4. The Contractor shall be required to furnish labor to the Owner for assisting in preparing test cylinders for testing. The Contractor shall provide approved curing boxes for storage of cylinders on site. The insulated curing box shall be of sufficient size and strength to contain all the specimens made in any four consecutive working days and to protect the specimens from falling over, being jarred or otherwise disturbed during the period of initial curing. The box shall be erected, furnished and maintained by the Contractor. Such box shall be equipped to provide the moisture and to regulate the temperature necessary to maintain the proper curing conditions required by ASTM C 31. Such box shall be located in an area free from vibration such as pile driving and traffic of all kinds and such that all specimen are shielded from direct sunlight and/or radiant heating sources. No concrete requiring inspection shall be delivered to the site until such storage curing box has been provided. Specimens shall remain undisturbed in the curing box until ready for delivery to the testing laboratory but not less than sixteen hours.
5. The Contractor shall be responsible for maintaining the temperatures of the curing box during the initial curing of test specimens with the temperature preserved between 60°F and 80°F as measured by a maximum-minimum thermometer. The Contractor shall maintain a written record of curing box temperatures for each day curing box contains test specimens. Temperature shall be recorded a minimum of three times a day with one recording at the start of the work day and one recording at the end of the work day.

6. When transported, the cylinders shall not be thrown, dropped, allowed to roll, or be damaged in any way.
7. Compression tests shall be performed in accordance with ASTM C 39. For 6x12 cylinders, two test cylinders will be tested at seven days and two at 28 days. For 4x8 cylinders, three test cylinders will be tested at seven days, three at 28 days. The remaining cylinders will be held to verify test results, if needed.

F. Evaluation and Acceptance of Concrete

1. Evaluation and acceptance of the compressive strength of concrete shall be according to the requirements of ACI 214, ACI 318, and ACI 350.
2. The strength level of concrete will be considered satisfactory if all of the following conditions are satisfied.
  - a. Every arithmetic average of any three consecutive strength tests equals or exceeds the minimum specified 28-day compressive strength for the mix (see Article 2.07).
  - b. No individual compressive strength test results falls below the minimum specified strength by more than 500 psi.
3. In the event any of the conditions listed above are not met, the mix proportions shall be corrected for the next concrete placing operation.
4. In the event that condition 2B is not met, additional tests in accordance with Article 3.10, paragraph H shall be performed.
5. When a ratio between 7-day and 28-day strengths has been established by these tests, the 7-day strengths shall subsequently be taken as a preliminary indication of the 28-day strengths. Should the 7-day test strength from any sampling be more than 10% below the established minimum strength, the Contractor shall:
  - a. Immediately provide additional periods of curing in the affected area from which the deficient test cylinders were taken.
  - b. Maintain or add temporary structural support as required.
  - c. Correct the mix for the next concrete placement operation, if required to remedy the situation.
6. All concrete which fails to meet the ACI requirements and these specifications is subject to removal and replacement at no additional cost to the Owner.

G. When non-compliant concrete is identified, test reports shall be sent immediately to the Engineer for review.

H. Additional Tests

1. When ordered by the Engineer, additional tests on in-place concrete shall be provided and paid for by the Contractor.

2. In the event the 28-day test cylinders fail to meet the minimum strength requirements as outlined in Article 3.10, paragraph F, the Contractor shall have concrete core specimens obtained and tested from the affected area immediately.
  - a. Three cores shall be taken for each sample in which the strength requirements were not met.
  - b. The drilled cores shall be obtained and tested in conformance with ASTM C 42. The tests shall be conducted by a materials testing consultant approved by the Engineer.
  - c. The location from which each core is taken shall be approved by the Engineer. Each core specimen shall be located, when possible, so its axis is perpendicular to the concrete surface and not near formed joints or obvious edges of a unit of deposit.
  - d. The core specimens shall be taken, if possible, so no reinforcing steel is within the confines of the core.
  - e. The diameter of core specimens should be at least 3 times the maximum nominal size of the course aggregate used in the concrete, but must be at least 2-inches in diameter.
  - f. The length of specimen, when capped, shall be at least twice the diameter of the specimen.
  - g. The core specimens shall be taken to the laboratory and when transported, shall not be thrown, dropped, allowed to roll, or damaged in any way.
  - h. Two (2) copies of test results shall be mailed directly to the Engineer. The concrete in question will be considered acceptable if the average compressive strength of a minimum of three test core specimens taken from a given area equal or exceed 85% of the specified 28-day strength and if the lowest core strength is greater than 75% of the specified 28-day strength.
3. In the event that concrete placed by the Contractor is suspected of not having proper air content, the Contractor shall engage a materials testing consultant approved by the Engineer, to obtain and test samples for air content in accordance with ASTM Specification C 457.

### 3.10 CARE AND REPAIR OF CONCRETE

- A. The Contractor shall protect all concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance by the Owner. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Care shall be exercised to avoid jarring forms or placing any strain on the ends of projecting reinforcing bars. Any concrete found to be damaged, or which may have been originally defective, or which becomes defective at any time prior to the final acceptance of the completed work, or which departs from the established line or grade, or which, for any other reason, does not conform to the requirements of the Contract Documents, shall be satisfactorily repaired or removed and replaced with acceptable concrete at no additional cost to the Owner.

- B. Areas of honeycomb shall be chipped back to sound concrete and repaired as directed.
- C. Concrete formwork blowouts or unacceptable deviations in tolerances for formed surfaces due to improperly constructed or misaligned formwork shall be repaired as directed. Bulging or protruding areas, which result from slipping or deflecting forms shall be ground flush or chipped out and redressed as directed.
- D. Areas of concrete in which cracking, spalling, or other signs of deterioration develop prior to final acceptance shall be removed and replaced or repaired as directed. This stipulation includes concrete that has experienced cracking due to drying or thermal shrinkage of the concrete. Structural cracks shall be repaired using an approved epoxy injection system. Non-structural cracks shall be repaired using an approved hydrophilic resin pressure injected grout system, unless other means of repair are deemed necessary and approved. All repair work shall be performed at no additional cost to the Owner.
- E. Concrete which fails to meet the strength requirements as outlined in Article 3.10, paragraph F, will be analyzed as to its adequacy based upon loading conditions, resultant stresses and exposure conditions for the particular area of concrete in question. If the concrete in question is found unacceptable based upon this analysis, that portion of the structure shall be strengthened or replaced by the Contractor at no additional cost to the Owner. The method of strengthening or extent of replacement shall be as directed by the Engineer.

- END OF SECTION -

SECTION 03350

CONCRETE FINISHES

PART 1 – GENERAL

1.01 THE REQUIREMENT

- A. Furnish all materials, labor, and equipment required to provide finishes of all concrete surfaces specified herein and shown on the Drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03100 – Concrete Formwork
- B. Section 03300 – Cast-in-Place Concrete
- C. Section 03600 – Grout

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.
  - 1. ACI 301 – Specifications for Structural Concrete for Buildings
  - 2. ACI 318 – Building Code Requirements for Structural Concrete

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300 – Submittals.
  - 1. Manufacturer's literature on all products specified herein.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 FINISHES ON FORMED CONCRETE SURFACES

- A. After removal of forms, the finishes described below shall be applied in accordance with Article 3.04 - Concrete Finish Schedule. Unless the finish schedule specifies otherwise, all surfaces shall receive at least a Type I finish. The Engineer shall be the sole judge of acceptability of all concrete finish work.
  - 1. Type I - Rough: All fins, burrs, offsets, marks and all other projections left by the forms shall be removed. Projections, depressions, etc. below finished grade required to be removed will only be those greater than 1/4-inch. All holes left by removal of



ends of ties, and all other holes, depressions, bugholes, air/blow holes or voids shall be filled solid with cement grout after first being thoroughly wetted and then struck off flush. The only holes below grade to be filled will be tie holes and any other holes larger than ¼-inch in any dimension. Honeycombs shall be chipped back to solid concrete and repaired as directed by the Engineer. All holes shall be filled with tools, such as sponge floats and trowels that will permit packing the hole solidly with cement grout. Cement grout shall consist of one part cement to three parts sand, epoxy bonding agent (for tie holes only) and the amount of mixing water shall be as little as consistent with the requirements of handling and placing. Color of cement grout shall match the adjacent wall surface.

2. Type II - Grout Cleaned: Where this finish is required, it shall be applied after completion of Type I finish. After the concrete has been predampened, a slurry consisting of one part cement (including an appropriate quantity of white cement in order to produce a color matching the surrounding concrete) and 1-1/2 parts sand passing the No. 16 sieve, by damp loose volume, shall be spread over the surface with clean burlap pads or sponge rubber floats. Mix proportions shall be submitted to the Engineer after a sample of the work is established and accepted. Any surplus shall be removed by scraping and then rubbing with clean burlap.
3. Type III - Smooth Rubbed: Where this finish is required, it shall be applied after the completion of the Type II finish. No rubbing shall be done before the concrete is thoroughly hardened and the mortar used for patching is firmly set. A smooth, uniform surface shall be obtained by wetting the surface and rubbing it with a carborundum stone to eliminate irregularities. Unless the nature of the irregularities requires it, the general surface of the concrete shall not be cut into. Corners and edges shall be slightly rounded by the use of the carborundum stone. Brush finishing or painting with grout or neat cement will not be permitted. A 100 square foot example shall be established at the beginning of the project to establish acceptability.

### 3.02 SLAB AND FLOOR FINISHES

A. The finishes described below shall be applied to floors, slabs, flow channels and top of walls in accordance with Article 3.04 - Concrete Finish Schedule. The Engineer shall be the sole judge of acceptability of all such finish work.

1. Type "A" - Screeded: This finish shall be obtained by placing screeds at frequent intervals and striking off to the surface elevation required. **When a Type "F" finish is subsequently to be applied, the surface of the screeded concrete shall be roughened with a concrete rake to 1/2" minimum deep grooves prior to final set.**
2. Type "B" - Wood or Magnesium Floated: This finish shall be obtained after completion of a Type "A" finish by working a previously screeded surface with a wood or magnesium float or until the desired texture is reached. Floating shall begin when the water sheen has disappeared and when the concrete has sufficiently hardened so that a person's foot leaves only a slight imprint. If wet spots occur, water shall be removed with a squeegee. Care shall be taken to prevent the formation of laitance and excess water on the finished surface. All edges shall be edged with an 1/8-inch tool as directed by the Engineer. The finished surface shall be true, even, and free from blemishes and any other irregularities.

3. Type "C" - Cork Floated: This finish shall be similar to Type "B" but slightly smoother than that obtained with a wood float. It shall be obtained by power or band floating with cork floats.
4. Type "D" - Steel Troweled: This finish shall be obtained after completion of a Type "B" finish. When the concrete has hardened sufficiently to prevent excess fine material from working to the surface, the surface shall be compacted and smoothed with not less than two thorough and complete steel troweling operations. In areas which are to receive a floor covering such as tile, resilient flooring, or carpeting, the applicable Specification Sections and Contract Drawings shall be reviewed for the required finishes and degree of flatness. In areas that are intermittently wet such as pump rooms, only one troweling operation is required to provide some trowel marks for slip resistance. All edges shall be edged with an 1/8-inch tool as directed by the Engineer. The finish shall be brought to a smooth, dense surface, free from defects and blemishes.
5. Type "E" - Broom or Belt: This finish shall provide the surface with a transverse scored texture by drawing a broom or burlap belt across the surface immediately after completion of a Type "B" finish. All edges shall be edged with 1/8-inch tool as directed by the Engineer.
6. Type "F" - Swept in Grout Topping: This finish shall be applied after a completion of a Type "A" finish. The concrete surface shall be properly cleaned, washed, and coated with a mixture of water and Portland Cement. Cement grout in accordance with Section 03600 shall then be plowed and swept into neat conformance with the blades or arms of the apparatus by turning or rotating the previously positioned mechanical equipment. Special attention shall be paid to true grades, shapes and tolerances as specified by the manufacturer of the equipment. Before beginning this finish, the Contractor shall notify the Engineer and the equipment manufacturer of the details of the operation and obtain approval and recommendations.
7. Type "J" - Raked Finish: This finish shall be provided by raking the surface as soon as the condition of the concrete permits by making depressions of  $\pm 1/4$  inch.

### 3.03 FINISHES ON EQUIPMENT PADS

- A. Formed surfaces of equipment pads shall receive a Type III finish.
- B. Top surfaces of equipment pads, except those surfaces subsequently required to receive grout and support equipment bases, shall receive a Type "D" finish, unless otherwise noted. Surfaces which will later receive grout shall, before the concrete takes its final set, be made rough by removing the sand and cement that accumulates on the top to the extent that the aggregate will be exposed with irregular indentations in the surface up to 1/2 inch deep.

### 3.04 CONCRETE FINISH SCHEDULE

Item	Type of Finish
Inner face of walls of tanks, flow channels, wet wells, perimeter walls, and miscellaneous concrete structures:	
From 1 feet below water surface to bottom of wall	I
From top of wall to 1 feet below water surface	II
Exterior concrete walls below grade	I
Exterior exposed concrete walls, ceilings, beams, manholes, hand holes, miscellaneous structures and columns (including top of wall) to one foot below grade. All other exposed concrete surfaces not specified elsewhere	II
Exterior concrete sidewalks, steps, ramps, decks, slabs on grade and landings exposed to weather	E
Floors of process equipment tanks indicated on Drawings to receive grout topping	F

- END OF SECTION -

SECTION 03370

CONCRETE CURING

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Protect all freshly deposited concrete from premature drying and from the weather elements. The concrete shall be maintained with minimal moisture loss at a relatively constant temperature for a period of time necessary for the hydration of the cement and proper hardening of the concrete in accordance with the requirements specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03100 – Concrete Formwork
- B. Section 03300 – Cast-In-Place Concrete
- C. Section 03350 – Concrete Finishes

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.
  - 1. ACI 301 – Specifications for Structural Concrete for Buildings
  - 2. ACI 304 – Guide for Measuring, Mixing, Transporting, and Placing Concrete
  - 3. ACI 305 – Hot Weather Concreting
  - 4. ACI 306 – Cold Weather Concreting
  - 5. ACI 308 – Standard Practice for Curing Concrete
  - 6. ASTM C171 – Standard Specifications for Sheet Materials for Curing Concrete
  - 7. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
  - 8. ASTM C1315 – Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals.
  - 1. Proposed procedures for protection of concrete under wet weather placement conditions.

2. Proposed normal procedures for protection and curing of concrete.
3. Proposed special procedures for protection and curing of concrete under hot and cold weather conditions.
4. Proposed method of measuring concrete surface temperature changes.
5. Manufacturer's literature and material certification for proposed curing compounds.

## PART 2 -- PRODUCTS

### 2.01 LIQUID MEMBRANE-FORMING CURING COMPOUND

- A. Clear curing and sealing compound shall be a clear styrene acrylate type complying with ASTM C 1315, Type 1, Class A with a minimum solids content of 30%. Moisture loss shall not be greater than 0.40 kg/m<sup>2</sup> when applied at 300 sq.ft./gal. Manufacturer's certification is required. Acceptable products are Super Diamond Clear VOX by the Euclid Chemical Company, MasteKure CC 300 SB by BASF Master Builder Solutions, and Cure & Seal 30 Plus by Symons Corporation.
- B. Where specifically approved by Engineer, on slabs to receive subsequent applied finishes, compound shall conform to ASTM C 309. Acceptable products are "Kurez DR VOX" or "Kurez W VOX" by the Euclid Chemical Company. Install in strict accordance with manufacturer's requirements.

### 2.02 EVAPORATION REDUCER

- A. Evaporation reducer shall be BASF, "MasterKure ER 50", or Euclid Chemical "Euco-Bar".

## PART 3 -- EXECUTION

### 3.01 PROTECTION AND CURING

- A. All freshly placed concrete shall be protected from the elements, flowing water and from defacement of any nature during construction operations.
- B. As soon as the concrete has been placed and horizontal top surfaces have received their required finish, provision shall be made for maintaining the concrete in a moist condition for at least a 7-day period thereafter except for high early strength concrete, for which the period shall be at least the first three days after placement. Horizontal surfaces shall be kept covered, and intermittent, localized drying will not be permitted.
- C. Walls that will be exposed on one side with either fluid or earth backfill on the opposite side shall be continuously wet cured for a minimum of five days. Use of a curing compound will not be acceptable for applications of this type.
- D. The Contractor shall use one of the following methods to insure that the concrete remains in a moist condition for the minimum period stated above.
  1. Ponding or continuous fogging or sprinkling.

2. Application of mats or fabric kept continuously wet.
  3. Continuous application of steam (under 150°F).
  4. Application of sheet materials conforming to ASTM C171.
  5. If approved by the Engineer, application of a curing compound in accordance with Article 3.04.
- E. The Contractor shall keep absorbent wood forms wet until they are removed. After form removal, the concrete shall be cured by one of the methods in paragraph D.
- F. Any of the curing procedures used in Paragraph 3.01-D may be replaced by one of the other curing procedures listed in Paragraph 3.01-D after the concrete is one-day old. However, the concrete surface shall not be permitted to become dry at any time.

### 3.02 CURING CONCRETE UNDER COLD WEATHER CONDITIONS

- A. Suitable means shall be provided for a minimum of 72 hours after placing concrete to maintain it at or above the minimum as placed temperatures specified in Section 03300, Cast-In-Place Concrete, for concrete work in cold weather. During the 72-hour period, the concrete surface shall not be exposed to air more than 20°F above the minimum as placed temperatures.
- B. Stripping time for forms and supports shall be increased as necessary to allow for retardation in concrete strength caused by colder temperatures. This retardation is magnified when using concrete made with blended cements or containing fly ash or ground granulated blast furnace slag. Therefore, curing times and stripping times shall be further increased as necessary when using these types of concrete.
- C. The methods of protecting the concrete shall be approved by the Engineer and shall be such as will prevent local drying. Equipment and materials approved for this purpose shall be on the site in sufficient quantity before the work begins. The Contractor shall assist the Engineer by providing holes in the forms and the concrete in which thermometers can be placed to determine the adequacy of heating and protection. All such thermometers shall be furnished by the Contractor in quantity and type which the Engineer directs.
- D. Curing procedures during cold weather conditions shall conform to the requirements of ACI 306.

### 3.03 CURING CONCRETE UNDER HOT WEATHER CONDITIONS

- A. When air temperatures exceed 85°F, the Contractor shall take extra care in placing and finishing techniques to avoid formation of cold joints and plastic shrinkage cracking. If ordered by the Engineer, temporary sun shades and/or windbreakers shall be erected to guard against such developments, including generous use of wet burlap coverings and fog sprays to prevent drying out of the exposed concrete surfaces.
- B. Immediately after screeding, horizontal surfaces shall receive an application of evaporation reducer. Apply in accordance with manufacturer's instructions. Final finish work shall begin as soon as the mix has stiffened sufficiently to support the workmen.

- C. Curing and protection of the concrete shall begin immediately after completion of the finishing operation. Continuous moist-curing consisting of method 1 or 2 listed in paragraph 3.01D is mandatory for at least the first 24 hours. Method 2 may be used only if the finished surface is not marred or blemished during contact with the coverings.
- D. At the end of the initial 24-hour period, curing and protection of the concrete shall continue for at least six (6) additional days using one of the methods listed in paragraph 3.01D.
- E. Curing procedures during hot weather conditions shall conform to the requirements of ACI 305.

#### 3.04 USE OF CURING COMPOUND

- A. Curing compound shall be used only where specifically approved by the Engineer. Curing compound shall never be used for curing exposed walls with fluid or earth backfill on the opposite side. A continuous wet cure for a minimum of five days is required for these applications. Curing compound shall not be used on surfaces exposed to water in potable water storage tanks and treatment plants unless curing compound is certified in accordance with ANSI/NSF Standard 61.
- B. When permitted, the curing compound shall maintain the concrete in a moist condition for the required time period, and the subsequent appearance of the concrete surface shall not be affected.
- C. The compound shall be applied in accordance with the manufacturer's recommendations after water sheen has disappeared from the concrete surface and after finishing operations. Maximum coverage for the curing and sealing compound shall be 300 square feet per gallon for trowel finishes and 200 square feet per gallon for floated or broom surfaces. Maximum coverage for compounds placed where subsequent finishes will be applied shall be 200 square feet per gallon. For rough surfaces, apply in two directions at right angles to each other.

#### 3.05 EARLY TERMINATION OF CURING

- A. Moisture retention measures may be terminated earlier than the specified times only when at least one of the following conditions is met:
  - 1. The strength of the concrete reaches 85 percent of the specified 28-day compressive strength in laboratory-cured cylinders representative of the concrete in place, and the temperature of the in-place concrete has been constantly maintained at 50 degrees Fahrenheit or higher.
  - 2. The strength of concrete reaches the specified 28-day compressive strength as determined by accepted nondestructive methods or laboratory-cured cylinder test results.

- END OF SECTION -

SECTION 03600

GROUT

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Furnish all materials, labor, and equipment required to provide all grout used in concrete work and as bearing surfaces for base plates, in accordance with the Contract Documents.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Requirements of related work are included in Division 1 and Division 2 of these Specifications.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.

- 1. CRD-C 621 Corps of Engineers Specification for Non-shrink Grout
- 2. ASTM C 33 Standard Specification for Concrete Aggregates
- 2. ASTM C 109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 inch or 50 mm cube Specimens)
- 3. ASTM C 531 Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts and Monolithic Surfacing
- 4. ASTM C 579 Test Method for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfacing
- 5. ASTM C 827 Standard Test Method for Early Volume Change of Cementitious Mixtures
- 6. ASTM C 1107 Standard Specification for Packaged Dry, Hydraulic Cement Grout (Nonshrink)

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300 - Submittals.
  - 1. Certified test results verifying the compressive strength and shrinkage and expansion requirements specified herein.



2. Manufacturer's literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for each type of grout used in the work.

#### 1.05 QUALITY ASSURANCE

##### A. Field Tests

1. Compression test specimens will be taken during construction from the first placement of each type of grout and at intervals thereafter as selected by the Engineer to insure continued compliance with these Specifications. The specimens will be made by the Contractor or its representative.
  - a. Compression tests and fabrication of specimens for cement grout and non-shrink grout will be performed as specified in ASTM C 109 at intervals during construction as selected by the Engineer. A set of three specimens will be made for testing at seven days, 28 days and any additional time period as appropriate.
  - b. Compression tests and fabrication of specimens for epoxy grout will be performed as specified in ASTM C 579, Method B, at intervals during construction as selected by the Engineer. A set of three specimens will be made for testing at seven days and any other time period as appropriate.
2. The cost of all laboratory tests on grout will be borne by the Contractor. The Contractor shall be charged for the cost of any additional tests and investigation on work performed which does not meet the specifications. The Contractor shall supply all materials necessary for fabricating the test specimens, at no additional cost to the Owner.
3. All grout, already placed, which fails to meet the requirements of these Specifications, is subject to removal and replacement at no additional cost to the Owner.

#### 1.06 GROUT COORDINATION CONFERENCE

- A. The Contractor shall conduct a meeting at the site. The purpose of the meeting is to review the proposed grout mix designs, to discuss the proposed approaches and procedures for mixing, transporting, placing, testing, finishing, and curing of all aspects of grout work to ensure the construction is performed in accordance with the Specifications, and to clarify roles of the parties involved. The Contractor shall send a grout coordination conference agenda to all attendees 5 days prior to a mutually agreed upon date for the conference.
- B. As a minimum the agenda shall include:
  1. Grout Materials and Mix Design
  2. Inspection Responsibilities
  3. Grout Sampling and Testing Requirements
  4. Sample Storage and Transportation

5. Acceptance/Rejection Responsibility and Authority for Fresh Grout, Basis for Rejection
  6. Grout Finishing
  7. Grout Curing
  8. Placement Schedule (hourly breakdown)
  9. Test Report Distribution
- C. The Contractor shall require responsible representatives of every party who is concerned with the grout work to attend the conference, including but not limited to the Contractor's superintendent or installation foreman, Engineer, Owner's representative, testing agency, subcontractors involved in placing grout, grout supplier and manufacturer's representative (clarifier).
- D. Minutes of the meeting shall be recorded, typed, and distributed to all attendees within three days of the meeting.

## PART 2 -- PRODUCTS

### 2.01 MATERIALS

#### A. Cement Grout for Clarifier Topping

1. Cement grout shall be composed of Portland Cement and sand in the proportion specified in the Contract Documents and the minimum amount of water necessary to obtain the desired consistency. If no proportion is indicated, cement grout shall consist of one part Portland Cement to three parts sand. Water amount shall be as required to achieve desired consistency without compromising strength requirements. White Portland Cement shall be mixed with the Portland Cement as required to match color of adjacent concrete. Grout shall include structural macro fibers.
2. The minimum compressive strength at 28 days shall be 4,000 psi.
3. Structural macro fibers shall meet requirements of ASTM C1116 with a minimum length of 2 inches, an aspect ratio between 50 and 90, and a minimum toughness rating R10, 50 = 60 (approximate) in accordance with ASTM C1609. Acceptable structural macro fibers are Tuf Strand SF by the Euclid Chemical Company, Strux 90/40 by W.R. Grace, or approved equal. Structural macro fibers shall be added to the grout mix at a rate of 1.5 lbs/cy. Structural macro fibers shall be added to the grout mix per the manufacturer's recommendations.
4. Sand shall conform to the requirements of ASTM C33.

#### B. Non-Shrink Grout

1. Non-shrink grout shall conform to CRD-C 621 and ASTM C 1107, Grade B or C when tested at a max. fluid consistency of 30 seconds per CDC 611/ASTM C939 at temperature extremes of 45°F and 90°F and an extended working time of 15

minutes. Grout shall have a min. 28-day strength of 7,000 psi. Non-shrink grout shall be, "Euco N-S" by the Euclid Chemical Company, "Sikagrout 212" by Sika Corporation, "Conspec 100 Non-Shrink Non-Metallic Grout" by Conspec, "Masterflow 555 Grout" by BASF Master Builder Solutions.

C. Epoxy Grout

1. Epoxy grout shall be "Sikadur 32 Hi-Mod" by Sika Corporation, "Duralcrete LV" by Tamms Industries, or "Euco #452 Series" by Euclid Chemical, "MasterEmaco ADH 1090 RS" by BASF Master Builder Solutions.
2. Epoxy grout shall be modified as required for each particular application with aggregate per manufacturer's instructions.

D. Epoxy Base Plate Grout

1. Epoxy base plate grout shall be "Sikadur 42, Grout-Pak" by Sika Corporation, or "Masterflow 648" by BASF Master Builder Solutions.

2.02 CURING MATERIALS

- A. Curing materials shall be as specified in Section 03370, Concrete Curing for cement grout (7 day moist cure) and as recommended by the manufacturer for prepackaged grouts.

PART 3 -- EXECUTION

3.01 GENERAL

- A. The different types of grout shall be used for the applications stated below unless noted otherwise in the Contract Documents. Where grout is called for in the Contract Documents which does not fall under any of the applications stated below, non-shrink grout shall be used unless another type is specifically referenced.
1. Cement grout shall be used for grout toppings and for patching of fresh concrete.
  2. Non-shrink grout shall be used for grouting beneath base plates of structural metal framing.
  3. Epoxy grout shall be used for bonding new concrete to hardened concrete.
  4. Epoxy base plate grout shall be used for precision seating of base plates including base plates for all equipment such as engines, mixers, pumps, vibratory and heavy impact machinery, etc.
- B. New concrete surfaces to receive cement grout topping shall be as specified in Section 03350, Concrete Finishes, and shall be cleaned of all dirt, grease and oil-like films. Existing concrete surfaces shall likewise be cleaned of all similar contamination and debris, including chipping or roughening the surface if a laitance or poor concrete is evident. Prior to grouting, wet surfaces to receive cement grout to surface saturated dry (SSD). The finish of the grout surface shall match that of the adjacent concrete. Curing and protection of cement grout shall be as specified in Section 03370, Concrete Curing.

Existing surfaces to receive cement grout topping shall be roughened to a ¼" amplitude using high-pressure (10,000 to 20,000 psi) water blasting. All laitance, debris and blasting slurry shall be removed prior to grout placement. Prior to grouting, wet surfaces to receive cement grout to surface saturated dry (SSD). The finish of the grout surface shall match that of the adjacent concrete. Curing and protection of cement grout shall be as specified in Section 03370, Concrete Curing.

- C. All mixing, surface preparation, handling, placing, consolidation, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.
- D. The Contractor, through the manufacturer of a non-shrink grout and epoxy grout, shall provide on-site technical assistance upon request, at no additional cost to the Owner.

### 3.02 CONSISTENCY

- A. The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow.

### 3.03 MEASUREMENT OF INGREDIENTS

- A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurement shall not be allowed.
- B. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

### 3.04 GROUT INSTALLATION

- A. Grout shall be placed quickly and continuously, shall completely fill the space to be grouted and be thoroughly compacted and free of air pockets. The grout may be poured in place, pressure grouted by gravity, or pumped. The use of pneumatic pressure or dry-packed grouting requires approval of the Engineer. For grouting beneath base plates, grout shall be poured from one side only and thence flow across to the open side to avoid air-entrapment.

- END OF SECTION -

SECTION 05010

METAL MATERIALS

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Metal materials not otherwise specified shall conform to the requirements of this Section.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Materials for fasteners are included in Section 05050, Metal Fastening.
- B. Requirements for specific products made from the materials specified herein are included in other sections of the Specifications. See the section for the specific item in question.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. ASTM A36 Standard Specification for Structural Steel
- B. ASTM A47 Standard Specification for Malleable Iron Castings
- C. ASTM A48 Standard Specification for Gray Iron Castings
- D. ASTM A53 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
- E. ASTM A167 Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
- F. ASTM A276 Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes
- G. ASTM A307 Standard Specification for Carbon Steel Externally Threaded Standard Fasteners
- H. ASTM A446 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) quality
- I. ASTM A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
- J. ASTM A501 Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
- K. ASTM A529 Standard Specification for Structural Steel with 42 000 psi (290 Mpa) Minimum Yield Point (1/2 in. (12.7 mm) Maximum Thickness)
- L. ASTM A536 Standard Specification for Ductile Iron Castings

- M. ASTM A570 Standard Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality
- N. ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
- O. ASTM A992 Standard Specification for Structural Steel Shapes
- P. ASTM A666 Standard Specification for Austenitic Stainless Steel, Sheet, Strip, Plate, and Flat Bar for Structural Applications
- Q. ASTM A1085 Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS)
- R. ASTM B26 Standard Specification for Aluminum-Alloy Sand Castings
- S. ASTM B85 Standard Specification for Aluminum-Alloy Die Castings
- T. ASTM B108 Standard Specification for Aluminum-Alloy Permanent Mold Castings
- U. ASTM B138 Standard Specification for Manganese Bronze Rod, Bar, and Shapes
- V. ASTM B209 Standard Specification for Aluminum-Alloy Sheet and Plate
- W. ASTM B221 Standard Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
- X. ASTM B308 Standard Specification for Aluminum-Alloy Standard Structural Shapes, Rolled or Extruded
- Y. ASTM B574 Standard Specification for Nickel-Molybdenum-Chromium Alloy Rod
- Z. ASTM F468 Standard Specification for Nonferrous Bolts, Hex Cap Screws, and Studs for General Use
- a. ASTM F593 Standard Specification for Stainless Steel Fasteners

#### 1.04 SUBMITTALS

- A. Material certifications shall be submitted along with any shop drawings for metal products and fabrications required by other sections of the Specifications.

#### 1.05 QUALITY ASSURANCE

- A. Owner may engage the services of a testing agency to test any metal materials for conformance with the material requirements herein. If the material is found to be in conformance with Specifications the cost of testing will be borne by the Owner. If the material does not conform to the Specifications, the cost of testing shall be paid by the Contractor and all materials not in conformance as determined by the Engineer shall be replaced by the Contractor at no additional cost to the Owner. In lieu of replacing materials the Contractor may request further testing to determine conformance, but any such testing shall be paid for by the Contractor regardless of outcome of such testing.

**PART 2 – PRODUCTS**

**2.01 CARBON AND LOW ALLOY STEEL**

A. Material types and ASTM designations shall be as listed below:

- |    |   |                       |
|----|---|-----------------------|
| 1. | Steel W Shapes  | A992                  |
| 2. | Steel HP Shapes   | A572 Grade 50         |
| 3. | Steel M, S, C, and MC shapes and Angles, Bars, and Plates | A36                   |
| 4. | Rods  | F 1554 Grade 36       |
| 5. | Pipe - Structural Use                                     | A53 Grade B           |
| 6. | Hollow Structural Sections                                | A500 Grade C or A1085 |
| 7. | Cold-Formed Steel Framing                                 | A 653                 |

**2.02 STAINLESS STEEL**

A. All stainless steel fabrications exposed to underwater service shall be Type 316. All other stainless steel fabrications shall be Type 304, unless noted otherwise.

B. Material types and ASTM designations are listed below:

- |    |                         |                           |
|----|-------------------------|---------------------------|
| 1. | Plates and Sheets       | ASTM A167 or A666 Grade A |
| 2. | Structural Shapes       | ASTM A276                 |
| 3. | Fasteners (Bolts, etc.) | ASTM F593                 |

**2.03 ALUMINUM**

A. All aluminum shall be alloy 6061-T6, unless otherwise noted or specified herein.

B. Material types and ASTM designations are listed below:

- |    |                                 |                        |
|----|---------------------------------|------------------------|
| 1. | Structural Shapes               | ASTM B308              |
| 2. | Castings                        | ASTM B26, B85, or B108 |
| 3. | Extruded Bars                   | ASTM B221 - Alloy 6061 |
| 4. | Extruded Rods, Shapes and Tubes | ASTM B221 - Alloy 6063 |
| 5. | Plates                          | ASTM B209 - Alloy 6061 |
| 6. | Sheets                          | ASTM B221 - Alloy 3003 |

C. All aluminum shall be provided with mill finish unless otherwise noted.

D. Where bolted connections are indicated, aluminum shall be fastened with stainless steel bolts.

2.04 CAST IRON

A. Material types and ASTM designations are listed below:

- |    |           |                          |
|----|-----------|--------------------------|
| 1. | Gray      | ASTM A48 Class 30B       |
| 2. | Malleable | ASTM A47                 |
| 3. | Ductile   | ASTM A536 Grade 60-40-18 |

2.05 BRONZE

A. Material types and ASTM designations are listed below:

- |    |                       |                          |
|----|-----------------------|--------------------------|
| 1. | Rods, Bars and Sheets | ASTM B138 - Alloy B Soft |
|----|-----------------------|--------------------------|

2.06 DISSIMILAR METALS

A. Dielectric isolation shall be installed wherever dissimilar metals are connected according to the following table.

	Zinc	Galvanized Steel	Aluminum	Cast Iron	Ductile Iron	Mild Steel/ Carbon Steel	Copper	Brass	Stainless Steel
Zinc			•	•	•	•	•	•	•
Galvanized Steel			•	•	•	•	•	•	•
Aluminum	•	•		•	•	•	•	•	•
Cast Iron	•	•	•				•	•	•
Ductile Iron	•	•	•				•	•	•
Mild Steel/ Carbon Steel	•	•	•				•	•	•
Copper	•	•	•	•	•	•			•
Brass	•	•	•	•	•	•			•
Stainless Steel	•	•	•	•	•	•	•	•	

1. "•" signifies dielectric isolation is required between the two materials noted.  
 2. Consult Engineer for items not listed in table.

PART 3 -- EXECUTION

(NOT USED)

- END OF SECTION -



SECTION 05035

GALVANIZING

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Where galvanizing is called for in the Contract Documents, the galvanizing shall be performed in accordance with the provisions of this Section unless otherwise noted.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Further requirements for galvanizing specific items may be included in other Sections of the Specifications. See section for the specific item in question.

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.

1. Kentucky Building Code
2. ASTM A123 - Standard Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip
3. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
4. ASTM A653 - Standard Specification for Steel Sheet, Zinc Coated (Galvanized), or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
4. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
5. ASTM A780 - Standard Practice of Repair of Damaged Hot-Dip Galvanized Coatings
6. ASTM F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals.

1. Certification that the item(s) are galvanized in accordance with the applicable ASTM standards specified herein. This certification may be included as part of any material certification that may be required by other Sections of the Specifications.

## PART 2 -- PRODUCTS

### 2.01 GALVANIC COATING

- A. Material composition of the galvanic coating shall be in accordance with the applicable ASTM standards specified herein.

## PART 3 -- EXECUTION

### 3.01 FABRICATED PRODUCTS

- A. Products fabricated from rolled, pressed, and forged steel shapes, plates, bars, and strips, 1/8 inch thick and heavier which are to be galvanized shall be galvanized in accordance with ASTM A123. Products shall be fabricated into the largest unit which is practicable to galvanize before the galvanizing is done. Fabrication shall include all operations necessary to complete the unit such as shearing, cutting, punching, forming, drilling, milling, bending, and welding. Components of bolted or riveted assemblies shall be galvanized separately before assembly. When it is necessary to straighten any sections after galvanizing, such work shall be performed without damage to the zinc coating. The galvanizer shall be a member of American Galvanizers Association.
- B. Components with partial surface finishes shall be commercial blast cleaned prior to pickling.
- C. Sampling and testing of each lot shall be performed prior to shipment from the galvanizer's facility per ASTM A123.

### 3.02 HARDWARE

- A. Iron and steel hardware which is to be galvanized shall be galvanized in accordance with ASTM A153 and ASTM F2329.

### 3.03 ASSEMBLED PRODUCTS

- A. Assembled steel products which are to be galvanized shall be galvanized in accordance with ASTM A123. All edges of tightly contacting surfaces shall be completely sealed by welding before galvanizing.
- B. Assemblies shall be provided with vent and drain holes as required by the fabricator. Vent and drain hole sizes and locations shall be included in the structural steel shop drawings required in Specification 05120 Structural Steel for approval. All vent and drain holes shall be plugged and finished to be flush with and blend in with the surrounding surface. Where water intrusion can occur, the plug shall be carefully melted into the surrounding zinc coating using an appropriate fluxing agent.

### 3.04 REPAIR OF GALVANIZING

- A. Galvanized surfaces that are abraded or damaged at any time after the application of zinc coating shall be repaired by thoroughly wire brushing the damaged areas and removing all loose and cracked coating, after which the cleaned areas shall be painted with 2 coats of zinc rich paint meeting the requirements of Federal Specification DOD-P-21035A and shall be thoroughly mixed prior to application. Zinc rich paint shall not be tinted. The total thickness of the 2 coats shall not be less than 6 mils. In lieu of repairing by painting with zinc rich paint, other methods of repairing galvanized surfaces in accordance with ASTM A780 may be used provided the proposed method is acceptable to the Engineer.

- END OF SECTION -

THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 05050

METAL FASTENING

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Furnish all materials, labor, and equipment required to provide all metal welds and fasteners not otherwise specified, in accordance with the Contract Documents.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 05010 - Metal Materials

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.

- |     |                        |  |
|-----|------------------------|--|
| 1.  | Kentucky Building Code |  |
| 2.  | AC 193                 | Acceptance Criteria for Mechanical Anchors in Concrete Elements              |
| 3.  | AC 308                 | Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements |
| 4.  | ACI 318                | Building Code Requirements for Structural Concrete                           |
| 5.  | ACI 355.2              | Qualifications of Post-Installed Mechanical Anchors in Concrete              |
| 6.  | ACI 355.4              | Qualifications of Post-Installed Adhesive Anchors in Concrete                |
| 7.  | AISC 348               | The 2009 RCSC Specification for Structural Joints                            |
| 8.  | AISC                   | Code of Standard Practice  |
| 9.  | AWS D1.1               | Structural Welding Code - Steel  |
| 10. | AWS D1.2               | Structural Welding Code - Aluminum   |
| 11. | AWS D1.6               | Structural Welding Code - Stainless Steel                                    |
| 12. | Aluminum Association   | Specifications for Aluminum Structures                                       |

- |     |                     |   |
|-----|---------------------|---|
| 13. | ASTM A572/A572M-94C | Standard Specification for High Strength Low-Alloy Columbium-Vanadium Structural Steel Grade 50 |
| 14. | ASTM A36            | Standard Specification for Carbon Structural Steel  |
| 15. | ASTM A325           | Standard Specification for High-Strength Bolts for Structural Steel Joints                      |
| 16. | ASTM A489           | Standard Specification for Eyebolts   |
| 17. | ASTM A490           | Standard Specification for Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints  |
| 18. | ASTM A563           | Standard Specifications for Carbon and Alloy Steel Nuts   |
| 19. | ASTM D1785          | Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe                                |
| 20. | ASTM E488           | Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements                  |
| 21. | ASTM F436           | Standard Specification for Hardened Steel Washers   |
| 22. | ASTM F467           | Standard Specification for Nonferrous Nuts for General Use                                      |
| 23. | ASTM F593           | Standard Specification for Stainless Steel Bolts; Hex Cap Screws, and Studs                     |
| 24. | ASTM F594           | Standard Specification for Stainless Steel Nuts   |
| 25. | ASTM F1554          | Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength              |

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300, Submittals.

1. Shop Drawings providing the fastener's manufacturer and type and certification of the fastener's material and capacity.
2. Anchor design calculations sealed by a Professional Engineer currently registered in the State of Kentucky. Only required if design not shown on Contract Drawings.
3. Manufacturer's installation instructions.
4. Copy of valid certification for each person who is to perform field welding.
5. Certified weld inspection reports, when required.

6. Welding procedures.
7. Installer qualifications.
8. Certification of Installer Training.
9. Inspection Reports.

#### 1.05 QUALITY ASSURANCE

- A. Fasteners not manufactured in the United States shall be tested and certification provided with respect to specified quality and strength standards. Certifications of origin shall be submitted for all U.S. fasteners supplied on the project.
- B. Installer Qualifications: All concrete anchors shall be installed by an Installer with at least three years of experience performing similar installations. Concrete adhesive anchor installer shall be certified as an Adhesive Anchor Installer in accordance with ACI-CRSI Adhesive Anchor Installation Certification Program.
- C. Installer Training: For concrete adhesive anchors, conduct a thorough training with the manufacturer or the manufacturer's representative for the Installer on the project. Training shall consist of a review of the complete installation process to include but not be limited to the following:
  1. Hole drilling procedure.
  2. Hole preparation and cleaning technique.
  3. Adhesive injection technique and dispenser training/maintenance.
  4. Concrete adhesive anchor preparation and installation.
  5. Proof loading/torquing.
- D. All steel welding shall be performed by welders certified in accordance with AWS D1.1. All aluminum welding shall be performed by welders certified in accordance with AWS D1.2. All stainless steel welding shall be performed by welders certified in accordance with AWS D1.6. Certifications of field welders shall be submitted prior to performing any field welds.
- E. Welds and high strength bolts used in connections of structural steel will be visually inspected in accordance with Article 3.04.
- F. The Owner may engage an independent testing agency to perform testing of welded connections and to prepare test reports in accordance with AWS. Inadequate welds shall be corrected or redone and retested to the satisfaction of the Engineer and/or an acceptable independent testing laboratory, at no additional cost to the Owner.
- G. Provide a welding procedure for each type and thickness of weld. For welds that are not prequalified, include a Performance Qualification Report. The welding procedure shall be given to each welder performing the weld. The welding procedure shall follow the format in Annex E of AWS D1.1 with relevant information presented.

- H. Inspections of the adhesive dowel system shall be made by the Engineer or other representatives of the Owner in accordance with the requirements of the ESR published by the manufacturer. Provide adequate time and access for inspections of products and anchor holes prior to injections, installation, and proof testing.

## PART 2 – PRODUCTS

### 2.01 ANCHOR RODS (ANCHOR BOLTS)

- A. Anchor rods shall conform to ASTM F1554 Grade 36 except where stainless steel or other approved anchor rods are shown on the Drawings. Anchor rods shall have hexagonal heads and shall be supplied with hexagonal nuts meeting the requirements of ASTM A563 Grade A.
- B. Where anchor rods are used to anchor galvanized steel or are otherwise specified to be galvanized, anchor rods and nuts shall be hot-dip galvanized in accordance with ASTM F1554.
- C. Where pipe sleeves around anchor rods are shown on the Drawings, pipe sleeves shall be cut from Schedule 40 PVC plastic piping meeting the requirements of ASTM D1785.

### 2.02 HIGH STRENGTH BOLTS

- A. High strength bolts and associated nuts and washers shall be in accordance with ASTM A325 or ASTM A490. Bolts, nuts and washers shall meet the requirements of AISC 348 "The 2009 RCSC Specification for Structural Joints".
- B. Where high strength bolts are used to connect galvanized steel or are otherwise specified to be galvanized, bolts, nuts, and washers shall be hot-dip galvanized in accordance with ASTM A325.

### 2.03 STAINLESS STEEL BOLTS

- A. Stainless steel bolts shall conform to ASTM F-593. All underwater fasteners, fasteners in confined areas containing fluid, and fasteners in corrosive environments shall be Type 316 stainless steel unless noted otherwise. Fasteners for aluminum and stainless steel members not subject to the above conditions shall be Type 304 stainless steel unless otherwise noted.
- B. Stainless steel bolts shall have hexagonal heads with a raised letter or symbol on the bolts indicating the manufacturer, and shall be supplied with hexagonal nuts meeting the requirements of ASTM F594. Nuts shall be of the same alloy as the bolts.

### 2.04 CONCRETE ANCHORS

- A. General
  - 1. Where concrete anchors are called for on the Drawings, one of the types listed below shall be used; except, where one of the types listed below is specifically called for on the Drawings, only that type shall be used. The determination of anchors equivalent to those listed below shall be on the basis of test data



performed by an approved independent testing laboratory. There are two types used:

- a. Expansion anchors shall be mechanical anchors of the wedge, sleeve, and drop-in or undercut type.
  - b. Adhesive anchors shall consist of threaded rods or bolts anchored with an adhesive system into hardened concrete. Adhesive anchors shall be two part injection type using the manufacturer's static mixing nozzle and shall be supplied as an entire system.
2. Expansion anchors shall not be used to hang items from above or in any other situations where direct tension forces are induced in anchor.
  3. Unless otherwise noted, all concrete anchors which are submerged or are used in hanging items or have direct tension induced upon them, or which are subject to vibration from equipment such as pumps and generators, shall be adhesive anchors.
  4. Adhesive anchors shall conform to the requirements of ACI 355.4 or alternately to AC 308. Expansion or mechanical anchors shall conform to the requirements of ACI 355.2 or alternately to AC 193.
  5. Fire Resistance: All anchors installed within fire resistant construction shall either be enclosed in a fire resistant envelope, be protected by approved fire-resistive materials, be used to resist wind and earthquake loads only, or anchor non-structural elements.
  6. Engineer's approval is required for use of concrete anchors in locations other than those shown on the Drawings.

**B. Concrete Anchor Design:**

An anchor design consists of specifying anchor size, quantity, spacing, edge distance and embedment to resist all applicable loads. Where an anchor design is indicated on the Drawings, it shall be considered an engineered design and anchors shall be installed to the prescribed size, spacing, embedment depth and edge distance. If all parts of an anchor design are provided on the Drawings except embedment depth, the anchors will be considered an engineered design and the Contractor shall provide the embedment depth as indicated in Paragraph B.3 unless otherwise directed by the Engineer. Where an anchor design is not indicated by the Engineer on the Drawings, the Contractor shall provide the anchor design per the requirements listed below.

1. **Structural Anchors:** All concrete anchors shall be considered structural anchors if they transmit load between structural elements; transmit load between non-structural components that make up a portion of the structure and structural elements; or transmit load between life-safety related attachments and structural elements. Examples of structural concrete anchors include but are not limited to column anchor bolts, anchors supporting non-structural walls, sprinkler piping support anchors, anchors supporting heavy, suspended piping or equipment, anchors supporting barrier rails, etc. For structural anchors, the Contractor shall submit an engineered design with signed and sealed calculations performed by an Engineer currently registered in the State of Kentucky. Structural anchors

shall be of a type recommended by the anchor manufacturer for use in cracked concrete and shall be designed by the Contractor in accordance with ACI 318 Appendix D.

2. Non-Structural Anchors: All other concrete anchors may be considered non-structural concrete anchors. The Contractor shall perform an engineered design for non-structural anchors. The Engineer may request the Contractor provide anchor design details for review, but submission of a signed, sealed design is not required. Non-structural anchors shall be designed by the contractor for use in uncracked concrete.
3. Embedment Depth
  - a. Minimum anchor embedment shall be as indicated on the Drawings or determined by the Contractor's engineered design.
  - b. Where the embedment depth is not shown on the Drawings, concrete anchors shall be embedded no less than the manufacturer's standard embedment (expansion or mechanical anchors) or to provide a minimum allowable bond strength equal to the allowable yield capacity of the rod according to the manufacturer (adhesive anchors).
  - c. The embedment depth shall be determined using the actual concrete compressive strength, a cracked concrete state, maximum long term temperature of 110 degrees F, and maximum short term temperature of 140 degrees F. In no case shall the embedment depth be less than the minimum or more than the maximum stated in the manufacturer's literature.

C. Structural Anchors:

1. Mechanical Anchors:
  - a. Wedge Anchors: Wedge anchors shall be "Kwik Bolt TZ" by Hilti, Inc., "TruBolt +" by ITW Redhead, "Strong-Bolt 2" by Simpson Strong-Tie Co. or "Power-Stud + SD-1" or "Power-Stud + SD-2" by DeWALT.
  - b. Screw Anchors: Screw anchors shall be "Kwik HUS-EZ" and "KWIK HUS-EZ-1" by Hilti, Inc., "Titen HD" by Simpson Strong-Tie Co., or "Wedge-Bolt +" by DeWALT. Bits specifically provided by manufacturer of chosen system shall be used for installation of anchors.
  - c. Sleeve Anchors: Sleeve anchors shall be "HSL-3 Heavy Duty Sleeve Anchor" by Hilti, Inc. or "Power-Bolt +" by DeWALT.
  - d. Undercut Anchors: Undercut anchors shall be "HDA Undercut Anchor" by Hilti, Inc., "Torq-Cut Undercut Anchor" by Simpson Strong-Tie Co., "Atomic + Undercut Anchor" by DeWALT.

2. Adhesive Anchors:

- a. Adhesive anchors shall be "Epcon C6+ Adhesive Anchoring System" by ITW Redhead, "HIT HY-200 Adhesive Anchoring System" by Hilti, Inc., "SET-XP Epoxy Adhesive Anchors" by Simpson Strong-Tie Co., or "Pure 110+ Epoxy Adhesive Anchor System" by DeWALT.
- b. Structural adhesive anchor systems shall be IBC compliant and capable of resisting short term wind and seismic loads (Seismic Design Categories A through F) as well as long term and short term sustained static loads in both cracked and uncracked concrete in all Seismic Design Categories. Structural adhesive anchor systems shall comply with the latest revision of ICC-ES Acceptance Criteria AC308, and shall have a valid ICC-ES report in accordance with the applicable building code. **No or equal products will be considered unless prequalified and approved by the Engineer and Owner.**

D. Non-Structural Anchors: In addition to the acceptable non-structural anchors listed below, all structural anchors listed above may also be used as non-structural anchors.

1. Mechanical Anchors:

- a. Wedge Anchors: Wedge anchors shall be "Kwik Bolt 3" by Hilti, Inc., "Wedge-All" by Simpson Strong-Tie Co. or "TruBolt" by ITW Redhead.
- b. Screw Anchors: Screw anchors shall be "Kwik HUS" by Hilti, Inc., "Screw Bolt +" or 316 Stainless Steel Wedge-Bolt" by DeWALT, "Large Diameter Tapcon (LDT) Anchor" by ITW Redhead, or "Titen HD" by Simpson Strong-Tie Co. Bits specifically provided by manufacturer of chosen system shall be used for installation of anchors.
- c. Sleeve Anchors: Sleeve anchors shall be "HSL Heavy Duty Sleeve Anchors" by Hilti, Inc. "Power-Bolt +" by DeWALT, "Dynabolt Sleeve Anchor" by ITW Redhead, or "Sleeve-All" by Simpson Strong-Tie Co.
- d. Drop-In Anchors: Drop-in anchors shall be "Drop-In" by Simpson Strong-Tie Co., "HDI Drop-In Anchor" by Hilti, Inc. or "Multi-Set II Drop-In Anchor" by ITW Redhead.
- e. Undercut Anchors: Undercut anchors shall be "HDA Undercut Anchor" by Hilti, Inc., or "Torq-Cut" by Simpson Strong-Tie Co.

2. Adhesive Anchors:

- a. Adhesive anchors shall be "Epcon A7" or "Epcon C6+ Adhesive Anchoring System" by ITW Redhead, "HIT HY-200 Adhesive Anchoring System" by Hilti, Inc., "SET Epoxy Tie High Strength Anchoring Adhesive" or "AT High Strength Anchoring Adhesive" by Simpson Strong-Tie Co., or "AC 100+ Gold" by DeWALT.
- b. Non-structural adhesive anchors systems shall be IBC compliant and capable of resisting short term wind and seismic (Seismic Design

Categories A and B) as well as long term and short term sustained static loads in uncracked concrete.

- c. Non-structural adhesive anchor embedment depth of the rod shall provide a minimum allowable bond strength that is equal to the allowable yield capacity of the rod unless noted otherwise on the Drawings.
- d. **No or equal products will be considered unless prequalified and approved by the Engineer and Owner.**

E. Concrete Anchor Rod Materials:

- 1. Concrete anchors used to anchor structural steel shall be a threaded steel rod per manufacturer's recommendations for proposed adhesive system, but shall not have a yield strength ( $f_y$ ) less than 58 ksi nor an ultimate strength ( $f_u$ ) less than 72.5 ksi, unless noted otherwise. Where steel to be anchored is galvanized, concrete anchors shall also be galvanized unless otherwise indicated on the Drawings.
- 2. Concrete anchors used to anchor aluminum, FRP, or stainless steel shall be Type 304 stainless steel unless noted otherwise. All underwater concrete anchors shall be Type 316 stainless steel.
- 3. Nuts, washers, and other hardware shall be of a material to match the anchors.

2.05 WELDS

- A. Electrodes for welding structural steel and all ferrous steel shall comply with AWS Code, using E70 series electrodes for shielded metal arc welding (SMAW), or F7 series electrodes for submerged arc welding (SAW).
- B. Electrodes for welding aluminum shall comply with the Aluminum Association Specifications and AWS D1.2.
- C. Electrodes for welding stainless steel and other metals shall comply with AWS D1.6.

2.06 ANTISEIZE LUBRICANT

- A. Antiseize lubricant shall be C5-A Anti-Seize by Loctite Corporation, Molykote P-37 Anti-Seize Paste by Dow Corning, 3M Anti-Seize by 3M, or equal.

PART 3 -- EXECUTION

3.01 MEASUREMENTS

- A. The Contractor shall verify all dimensions and review the Drawings and shall report any discrepancies to the Engineer for clarification prior to starting fabrication.

3.02 ANCHOR INSTALLATION

- A. Anchor Rods, Concrete Anchors, and Masonry Anchors

1. Anchor rods shall be installed in accordance with AISC "Code of Standard Practice" by setting in concrete while it is being placed and positioned by means of a rigidly held template. Overhead adhesive anchors, and base plates or elements they are anchoring, shall be shored as required and securely held in place during anchor setting to prevent movement during anchor installation. Movement of anchors during curing is prohibited.
2. The Contractor shall verify that all concrete and masonry anchors have been installed in accordance with the manufacturer's recommendations and that the capacity of the installed anchor meets or exceeds the specified safe holding capacity.
3. Concrete anchors shall not be used in place of anchor rods without Engineer's approval.
4. All stainless steel threads shall be coated with antiseize lubricant.

**B. High Strength Bolts**

1. All bolted connections for structural steel shall use high strength bolts. High strength bolts shall be installed in accordance with AISC 348 "The 2009 RCSC Specification for Structural Joints". All bolted joints shall be Type N, snug-tight, bearing connections in accordance with AISC Specifications unless noted otherwise on the Drawings.

**C. Concrete Anchors**

1. Concrete at time of anchor installation shall be a minimum age of 21 days, have a minimum compressive strength of 2500 psi, and shall be at least 50 degrees F.
2. Concrete anchors designed by the Contractor shall be classified as structural or non-structural based on the requirements indicated above.
3. All concrete anchors shall be installed in strict conformance with the manufacturer's printed installation instructions. A representative of the manufacturer shall be on site when required by the Engineer.
4. All holes shall be drilled in accordance with the manufacturer's instructions except that cored holes shall not be allowed unless specifically approved by the Engineer. If cored holes are allowed by the manufacturer and approved by the Engineer, cored holes shall be roughened in accordance with manufacturer requirements. Thoroughly clean drill holes of all debris, drill dust, and water in accordance with the manufacturer's instructions prior to installation of adhesive and threaded rod unless otherwise recommended by the manufacturer. Degree of hole dampness shall be in strict accordance with manufacturer recommendations. Installation conditions shall be either dry or water-saturated. Water filled or submerged holes shall not be permitted unless specifically approved by the Engineer. Injection of adhesive into the hole shall be performed to minimize the formation of air pockets in accordance with the manufacturer's instructions. Wipe rod free from oil that may be present from shipping or handling.

D. Other Bolts

1. All dissimilar metal shall be connected with appropriate fasteners and shall be insulated with a dielectric or approved equal.
2. All stainless steel bolts shall be coated with antiseize lubricant.

3.03 WELDING

- A. All welding shall comply with AWS Code for procedures, appearance, quality of welds, qualifications of welders and methods used in correcting welded work.
- B. Welded stud connectors shall be installed in accordance with AWS D1.1.

3.04 INSPECTION

- A. High strength bolting will be visually inspected in accordance with AISC 348 "The 2009 RCSC Specification for Structural Joints". Rejected bolts shall be either replaced or retightened as required.
- B. Field welds will be visually inspected in accordance with AWS Codes. Inadequate welds shall be corrected or redone as required in accordance with AWS Codes.
- C. Post-installed concrete anchors shall be inspected as required by ACI 318.

3.05 CUTTING OF EMBEDDED REBAR

- A. The Contractor shall not cut embedded rebar cast into structural concrete during installation of post-installed fasteners without prior approval of the Engineer.

- END OF SECTION -

SECTION 07900

JOINT FILLERS, SEALANTS AND CAULKING

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Furnish labor, materials, equipment and appliances required for the complete execution of Work shown on the Drawings and specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03250 - Concrete Accessories
- B. Section 03290 - Joints in Concrete

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.

- 1. ASTM C-920 Elastomeric Joint Sealants
- 2. ASTM D-1056 Flexible Cellular Materials - Sponge or Expanded Rubber
- 3. SWRI Sealant and Caulking Guide Specification

1.04 SUBMITTALS

- A. In accordance with the procedures and requirements set forth in Section 01300 – Submittals, submit the following:
  - 1. Manufacturers literature and installation instructions.
  - 2. Color samples of each type of sealant.

1.05 QUALITY ASSURANCE

- A. Applicator shall be a company specializing in the installation of sealants with a minimum of five years experience.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened labeled packages.
- B. Store materials in location protected from freezing or damages.
- C. Reject and remove from the site materials within broken or damaged packaging.

## PART 2 -- PRODUCTS

### 2.01 MATERIALS

#### A. Sealants

1. Type 1: Multi-component, non-sag, low-modulus polyurethane rubber sealant meeting ASTM C-920, Type M, Grade NS, Class 25, use NT, M, A, and O. Capable of withstanding 50% in extension or compression such as Sikaflex-2C NS/SL, Sika Corporation, or Sonolastic NP-2, Sonneborn, or DynaTrol II by Pecora Corporation.
  2. Type 2: Single component polyurethane sealant meeting ASTM C-920, Type S, Grade NS, Class 25, Use NT, M, A, and O. Capable of withstanding 25% in extension or compression such as Sikaflex 1A by Sika Corporation, DynaTrol 1-XL by Pecora Corporation, or Sonolastic NP-1 by BASF Construction Chemicals.
  3. Type 3: Single component, low-modulus moisture curing silicone meeting ASTM C-920, Type S, Grade NS, Class 25, Use NT, M, G, and A. Capable of withstanding 50% extension and compression. Pecora 890 by Pecora Corporation, Sonolastic Omni Seal by BASF Construction Chemicals.
  4. Type 4: Single component, mildew resistant, moisture-curing silicone meeting ASTM C-920, Type S, Grade NS, Class 25, Use NT, M, G, and A. Pecora 898 by Pecora Corporation, Sonolastic Omni Plus by BASF Construction Chemicals.
  5. Type 5: Single component, acrylic latex meeting ASTM C-834. AC-20+ Silicone by Pecora Corporation, Sonneborn Sonolac by BASF Construction Chemicals.
  6. Type 6: High grade butyl sealant meeting Federal Specification TT-S-00-1657. BC-158 by Pecora Corporation or equal.
  7. Type 7: Multi-component chemical resistant polysulfide sealant conforming to ASTM C-920, Type M, Grade NS, Class 25 such as Deck-O-Seal by W.R. Meadows, Tammsflex by DuraJoint Concrete Accessories, or Synthacalk GC2+ by Pecora Corporation.
  8. Type 8: Nonsag, Multi Component, traffic grade polyurethane sealant meeting ASTM C920, Type 19, Grade NS, Class 25, use T, M, A, and O. DynaTread by Pecora Corporation, Sonolastic Ultra by BASF Construction Chemicals.
- B. Primer: Non-staining primer recommended by sealant manufacturer for the substrates on this project.
- C. Backer Rod: Closed cell foam, nonreactive with caulking materials, non-oily, and approved by the sealant manufacturer. Minimum density shall be 2.00 pounds per cubic foot. Use no asphalt or bitumen-impregnated fiber with sealants.
- D. Joint Cleaner: Recommended by sealant or caulking compound manufacturer.
- E. Bond breaker: Either polyethylene film or plastic tape as recommended by the sealant manufacturer.



- F. Color: Where manufacturer's standard colors do not closely match materials being sealed, provide a custom color.

**PART 3 -- EXECUTION**

**3.01 QUALITY CONTROL**

- A. Coordinate work with details shown on approved shop drawings prepared by other trades.
- B. Verify conditions in the field.
- C. Schedule work to follow closely the installation of other trades.
- D. Apply sealants and related items in temperatures and dry conditions recommended by the manufacturers.
- E. Do not paint sealant, unless recommended by sealant and paint manufacturer.

**3.02 PREPARATION**

- A. Protect finished surfaces adjoining by using masking tape or other suitable materials.
- B. Clean and prime joints before starting any caulking or sealing work.
- C. Thoroughly clean joints and spaces of mortar and other foreign materials. Cleaning agent shall be Xylol or similar non-contaminating solvent to remove any film from metal surfaces. Masonry or concrete surfaces shall be brushed or air jet cleaned.
- D. Joint Requirements
  - 1. All joints and spaces to be sealed in exterior work shall be less than 1/2 inch deep and not less than 1/4 inch wide. If joints in masonry are less than that specified herein, the mortar shall be cut out to the required width and depth. All joints and spaces to receive sealant shall be completely prepared and thoroughly dry before installation of sealant.
  - 2. Unless otherwise specified, joints and spaces which are open to a depth of 1/2 inch or greater shall be solidly filled with back-up material to within 1/4 inch of the surface. Back-up material shall be packed tightly and made continuous throughout the length of the joints. Bond breaker shall be applied as required. If joints are less than 1/4 inch deep, the back-up material may be omitted, a bond breaker substituted and the joint completely filled with sealant. The back-up material shall not project beyond the 1/4 inch depth of the open space in any joint. The following width-to-depth ratio table shall be adhered to, unless otherwise recommended by manufacturer.

Joint Width	Sealant Depth	
	Minimum	Maximum
1/4 inch	1/4 inch	1/4 inch
Over 1/4 inch to 1/2 inch	1/4 inch	Equal to width
Over 1/2 inch to 1 inch	1/2 inch	Equal to width
Over 1 inch to 2 inch	1/2 inch	1/2 of width

### 3.03 APPLICATION

- A. Exercise care before, during, and after installation so as not to damage any material by tearing or puncturing. All finished work shall be approved before covering with any other material or construction.
- B. Apply sealant by an approved type of gun except where the use of a gun is not practicable, suitable hand tools shall be used. Avoid applying the compound to any surface outside of the joints or spaces to be sealed. Mask areas where required to prevent overlapping of sealant.
- C. All joints shall be waterproof and weathertight.
- D. Point sealed joints to make a slightly concave joint, the edges of which are flush with the surrounding surfaces. Exposed joints in the interior side of the door and other frames shall be neatly pointed flush or to match adjacent jointing work.
- E. Adjacent materials which have been soiled shall be cleaned immediately and the work left in neat and clean condition.
- F. Comply with sealant manufacturer's written instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.

### 3.04 ADJUSTMENT AND CLEANING

- A. Remove misplaced sealant compounds promptly using methods and materials recommended by the manufacturer, as the work progresses.
- B. Allow sealants to cure and remove protective edging, of doors, louvers, saddles windows etc. as directed by the Engineer.

### 3.05 SCHEDULE

#### Schedule of Sealants

<b>Application</b>	<b>Sealant</b>	<b>Color</b>
Vertical and horizontal expansion and construction joints in concrete structures unless noted otherwise herein or on Drawings.	Type 1	To closely match adjacent surfaces or mortar and as selected by the Owner.
Vertical and horizontal joints bordered on both sides by masonry, precast concrete, natural stone or other porous building material, unless noted otherwise herein or on Drawings.	Type 2	To closely match adjacent surfaces or mortar and as selected by the Owner.
Vertical and horizontal joints bordered on both sides by painted metals, anodized aluminum, mill finished aluminum, PVC, glass or other non-porous building material.	Type 3	To closely match adjacent surfaces and as selected by the Owner.
Masonry expansion and control joints less than 1¼" wide.	Type 2	To closely match adjacent surfaces and as selected

<b>Application</b>	<b>Sealant</b>	<b>Color</b>
		by the Owner.
Masonry expansion and control joints equal or greater than 1¼ inches wide and not to exceed 2".	Type 1	To closely match adjacent surfaces and as selected by the Owner.
Interior – wood trim and finish joints.	Type 5	Color to be selected by Owner
Sanitary areas, joints in ceramic tile, around plumbing fixtures, countertops, and back splashes. See Note 1.	Type 4	To closely match adjacent surfaces and as selected by the Owner.
Perimeter sealing of doors, windows, louvers, piping, ducts, and electrical conduit. See Note 2.	Type 2 OR Type 3	To closely match adjacent surfaces and as selected by the Owner.
Below thresholds.	Type 6	Manufacturer's standard
Submerged in liquids. See Note 4.	Type 1	Manufacturer's standard
Submerged in liquids with high concentration of chlorine (> 2 ppm).	Type 7	Manufacturer's standard
Horizontal Joints exposed to vehicular or pedestrian traffic.	Type 8	To closely match adjacent surfaces.
Other joints indicated on the drawings or customarily sealed but not listed.	Type recommended by manufacturer	To closely match adjacent surfaces and as selected by the Owner.

Note 1. Sealant for Laboratory Countertop shall be as recommended by countertop manufacturer.

Note 2. Provide UL approved sealants for penetrations thru fire-rated walls and as specified in Section 07270.

Note 3. Sealants which will come in contact with potable water shall meet the requirements of NSF 61.

Note 4. Where sealant will be immersed in liquid chemicals verify compatibility prior to installation of sealant.

- END OF SECTION -

THIS PAGE LEFT BLANK INTENTIONALLY

SECTION 09900

PAINTING

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Furnish labor, materials, equipment and appliances required for complete execution of Work shown on Drawings and Specified herein.
- B. The Contractor shall reference the Walker Process Equipment proposal included in Specification Section 11461 for the specified cleaning requirements and painting system for the Walker Clarifier equipment.
- C. Section Includes:
  - 1. Paint Materials
  - 2. Shop Painting
  - 3. Field Painting
    - a. Surface Preparation
    - b. Piping and Equipment Identification
    - c. Schedule of Colors
    - d. Work in Confined Spaces
    - e. OSHA Safety Colors

1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of these Specifications, the Work shall conform to the applicable requirements of the following documents:
  - 1. SSPC – The Society for Protective Coatings Standards
    - a. SSPC-Vis 1 Pictorial Surface Preparation Standards for Painting Steel Structures
    - b. SSPC-SP2 Hand Tool Cleaning
    - c. SSPC-SP3 Power Tool Cleaning
    - d. SSPC-SP5 White Metal Blast Cleaning
    - e. SSPC-SP6 Commercial Blast Cleaning
    - f. SSPC-SP10 Near-White Metal Blast

g. SSPC-SP13/NACE6 Surface Preparation of Concrete

2. NACE - National Association of Corrosion Engineers
3. ASTM D1737 - Test Method for Elongation of Attached Organic Coatings with Cylindrical Mandrel Apparatus
4. ASTM B117 - Method of Salt Spray (Fog) Testing
5. ASTM D4060 - Test Method for Abrasion Resistance of Organic Coating by the Taber Abraser
6. ASTM D3359 - Method for Measuring Adhesion by Tape Test

1.03 SUBMITTALS

- A. In accordance with the procedures and requirements set forth in Section 01300 - Submittals, submit the following:
  1. Manufacturer's literature and Material Safety Data Sheets for each product.
  2. Painting schedule identifying surface preparation and paint systems proposed. Cross-reference with Tables 9-1 and 9-2. Provide the name of the paint manufacturer, and name, address, and telephone number of manufacturer's representative who will inspect the work. Submit schedule for approval as soon as possible following the Award of Contract, so approved schedule may be used to identify colors and specify shop paint systems for fabricated items.

1.04 SYSTEM DESCRIPTION

- A. Work shall include surface preparation, paint application, inspection of painted surfaces and corrective action required, protection of adjacent surfaces, cleanup and appurtenant work required for the proper painting of all surfaces to be painted. Surfaces to be painted are designated within the Painting Schedule and may include new and existing piping, miscellaneous metals, equipment, buildings, exterior fiberglass, exposed electrical conduit and appurtenance.
- B. Perform Work in strict accordance with manufacturer's published recommendations and instructions, unless the Engineer stipulates that deviations will be for the benefit of the project.
- C. Paint surfaces which are customarily painted, whether indicated to be painted or not, with painting system applied to similar surfaces, areas and environments, and as approved by Engineer.
- D. Piping and equipment shall receive color coding and identification. Equipment shall be the same color as the piping system.

1.05 QUALITY ASSURANCE

- A. Painting operations shall be accomplished by skilled craftsman and licensed by the state to perform painting work.

- C. Provide a letter indicating that the painting applicator has five years of experience, and 5 references which show previously successful application of the specified or comparable painting systems. Include the name, address, and the telephone number for the Owner of each installation for which the painting applicator provided services.

#### 1.06 STORAGE AND DELIVERY

- A. Bring materials to the job site in the original sealed and labeled containers.
- B. Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

### PART 2 – MATERIALS

#### 2.01 GENERAL INFORMATION

- A. The term "paint" is defined as both paints and coatings including emulsions, enamels, stains, varnishes, sealers, and other coatings whether organic or inorganic and whether used as prime, intermediate, or finish coats.
- B. Purchase paint from an approved manufacturer. Manufacturer shall assign a representative to inspect application of their product both in the shop and field. The manufacturer's representative shall submit a report to the Engineer at the completion the Work identifying products used and verifying that surfaces were properly prepared, products were properly applied, and the paint systems were proper for the exposure and service.
- C. Provide primers and intermediate coats produced by same manufacturer as finish coat. Use only thinners approved by paint manufacturer, and only within manufacturer's recommended limits.
- D. Ensure compatibility of total paint system for each substrate. Test shop primed equipment delivered to the site for compatibility with final paint system. Provide an acceptable barrier coat or totally remove shop applied paint system when incompatible with system specified, and repaint with specified paint system.
- E. Use painting materials suitable for the intended use and recommended by paint manufacturer for the intended use.
- F. Require that personnel perform work in strict accordance with the latest requirements of OSHA Safety and Health Standards for construction. Meet or exceed requirements of regulatory agencies having jurisdiction and the manufacturer's published instructions and recommendations. Maintain a copy of all Material Safety Data Sheets at the job site of each product being used prior to commencement of work. Provide and require that personnel use protective and safety equipment in or about the project site. Provide respiratory devices, eye and face protection, ventilation, ear protection, illumination and other safety devices required to provide a safe work environment.

## 2.02 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Specifications, provide products from one of the following manufacturers:
  - 1. Tnemec Company Inc.
  - 2. Ameron
  - 3. CARBOLINE
  - 4. Sherwin-Williams
  - 5. International

## PART 3 -- EXECUTION

### 3.01 SHOP PAINTING

- A. Shop prime fabricated steel and equipment with at least one shop coat of prime paint compatible with finish paint system specified. Prepare surface to be shop painted in strict accordance with paint manufacturer's recommendations and as specified. Finish coats may be shop applied, if approved by the Engineer. Package, store and protect shop painted items until they are incorporated into Work. Repair painted surfaces damaged during handling, transporting, storage, or installation to provide a painting system equal to the original painting received at the shop.
- B. Identify surface preparation and shop paints on Shop Drawings. Verify compatibility with field applied paints.

### 3.02 SURFACE PREPARATION

- A. General
  - 1. Surfaces to be painted shall be clean and dry, and free of dust, rust, scale, and foreign matter. No solvent cleaning, power or hand tool cleaning shall be permitted unless approved by the Engineer.
  - 2. Protect or remove, during painting operations, hardware, accessories, machined surfaces, nameplates, lighting fixtures, and similar items not intended to be painted prior to cleaning and painting. Reposition items removed upon completion of painting operations.
  - 3. Examine surfaces to be coated to determine that surfaces are suitable for specified surface preparation and painting. Report to Engineer surfaces found to be unsuitable in writing. Do not start surface preparation until unsuitable surfaces have been corrected. Starting surface preparation precludes subsequent claim that such surfaces were unsuitable for the specified surface preparation or painting.
  - 4. Surface preparation shall be in accordance with specifications and manufacturer's recommendations. Provide additional surface preparation, and fill coats where



manufacturer recommends additional surface preparation, in addition to requirements of specification.

5. Touch-up shop or field applied coatings damaged by surface preparation or any other activity, with the same shop or field applied coating; even to the extent of applying an entire coat when required to correct damage prior to application of the next coating. Touch-up coats are in addition to the specified applied systems, and not considered a field coat.
6. Protect motors and other equipment during blasting operation to ensure blasting material is not blown into motors or other equipment. Inspect motors and other equipment after blasting operations and certify that no damage occurred, or where damage occurred, the proper remedial action was taken.
7. Field paint shop painted equipment in compliance with Color Coding and as approved by Engineer.

**B. Metal Surface Preparation**

1. Conform to current The Society for Protective Coatings Standards (SSPC) Specifications for metal surface preparation. Use SSPC-Vis-1 pictorial standards or NACE visual standards TM-01-70 or TM-01-75 to determine cleanliness of abrasive blast cleaned steel.
2. Perform blast cleaning operations for metal when following conditions exist:
  - a. Moisture is not present on the surface.
  - b. Relative humidity is below 80%.
  - c. Ambient and surface temperatures are 5°F or greater than the dew point temperature.
  - d. Painting or drying of paint is not being performed in the area.
  - e. Equipment is in good operating condition.
  - f. Proper ventilation, illumination, and other safety procedures and equipment are being provided and followed.
3. Sandblast ferrous metals to be shop primed, or component mechanical equipment in accordance with SSPC-SP5, White Metal Blast.
4. Sandblast field prepared ferrous metals in accordance with SSPC-SP10, Near White Metal Blast, where metal is to be submerged, in a corrosive environment, or in severe service.
5. Sandblast field prepared ferrous metals in accordance with SSPC-SP6 Commercial Blast, where metal is to be used in mild or moderate service, or non-corrosive environment.

6. Clean nonferrous metals, copper, or galvanized metal surfaces in accordance to SSPC-SP1, Solvent Cleaning, or give one coat of metal passivator or metal conditioner compatible with the complete paint system.
7. Prime cleaned metals immediately after cleaning to prevent rusting.
8. Clean rusted metals down to bright metal by sandblasting and immediately field primed.

#### C. Concrete Surface Preparation

1. Cure concrete a minimum of 30 days before surface preparation, and painting begins.
2. Test concrete for moisture content, pH and salts using test method recommended by the paint manufacturer. Do not begin surface preparation, or painting until moisture content is acceptable to manufacturer.
3. Prepare concrete surfaces to receive coatings in accordance with SSPC-13 -- Concrete Surface Preparation. Remove contaminants, open bugholes, surface voids, air pockets, and other subsurface irregularities using blasting or grinding. Do not expose underlying aggregate. Use dry, oil-free air for blasting operations. Surface texture after blasting shall achieve profile as required by manufacturer or where not defined by manufacturer similar to that of medium grit sandpaper. Remove residual abrasives, dust, and loose particles by vacuuming or other approved method.
4. Surface defects, such as hollow areas, bugholes, honeycombs, and voids shall be filled with polymeric filler compatible with painting system. Complete fill coats may be used in addition to specified painting system and as approved by the Engineer. Fins, form marks, and all protrusions or rough edges shall be removed.
5. Repair existing concrete surfaces which are deteriorated to the point that surface preparation exposes aggregate with fill coats or patching mortar as recommended by paint manufacturer and as directed by the Engineer.
6. Clean concrete of all dust, form oils, curing compounds, oil, tar, laitance, efflorescence, loose mortar, and other foreign materials before paints are applied.

#### D. Castings

1. Prepare castings for painting by applying a brush or a knife-applied filler. Fillers are not to be used to conceal cracks, gasholes, or excessive porosity.
2. Apply one coat of primer with a minimum thickness of 1.2 mils in addition to coats specified. Allow sufficient drying time before further handling.

#### E. Previously-Painted Surfaces

1. Totally remove existing paint when: surface is to be submerged in a severe environment, paint is less than 75% intact, brittle, eroded or has underfilm rusting.

2. Surfaces which are greater than 75% intact require removal of failed paints and then spot primed. Spot priming is in addition to coats specified.
3. Remove surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers.
4. Clean and dull glossy surfaces prior to painting in accordance with the manufacturer's recommendations.
5. Check existing paints for compatibility with new paint system. If incompatible, totally remove existing paint system or apply a barrier coat recommended by the paint manufacturer. Remove existing paints of undetermined origin. Prepare a test patch of approximately 3 square feet over existing paint. Allow test patch to dry thoroughly and test for adhesion. If proper adhesion is not achieved remove existing paint and repaint.

### 3.03 APPLICATION OF PAINT

- A. Apply paint by experienced painters with brushes or other applicators approved by the Engineer, and paint manufacturer.
- B. Apply paint without runs, sags, thin spots, or unacceptable marks.
- C. Apply at rate specified by the manufacturer to achieve at least the minimum dry mil thickness specified. Apply additional coats, if necessary, to obtain thickness.
- D. Special attention shall be given to nuts, bolts, edges, angles, flanges, etc., where insufficient film thicknesses are likely. Stripe paint prior to applying prime coat. Stripe painting shall be in addition to coats specified.
- E. Perform thinning in strict accordance with the manufacturer's instructions, and with the full knowledge and approval of the Engineer and paint manufacturer.
- F. Allow paint to dry a minimum of twenty-four hours between application of any two coats of paint on a particular surface, unless shorter time periods are a requirement by the manufacturer. Longer drying times may be required for abnormal conditions as defined by the Engineer and paint manufacturer. Do not exceed manufacturer's recommended drying time between coats.
- G. Suspend painting when any of the following conditions exist:
  1. Rainy or excessively damp weather.
  2. Relative humidity exceeds 85%.
  3. General air temperature cannot be maintained at 50°F or above through the drying period, except on approval by the Engineer and paint manufacturer.
  4. Relative humidity will exceed 85% or air temperature will drop below 40°F within 18 hours after application of paint.
  5. Surface temperature of item is within 5 degrees of dewpoint.

6. Dew or moisture condensation are anticipated.
7. Surface temperature exceeds the manufacturer's recommendations.

#### 3.04 INSPECTION

- A. Each field coat of paint will be inspected and approved by the Engineer or his authorized representative before succeeding coat is applied. Tint successive coats so that no two coats for a given surface are exactly the same color. Tick-mark surfaces to receive black paint in white between coats.
- B. Use magnetic dry film thickness gauges and wet film thickness gauges for quality control. Furnish magnetic dry film thickness gauge for use by the Engineer.
- C. Coatings shall pass a holiday detector test.
- D. Determination of Film Thickness: Randomly selected areas, each of at least 107.5 contiguous square feet, totaling at least 5% of the entire control area shall be tested. Within this area, at least 5 squares, each of 7.75 square inches, shall be randomly selected. Three readings shall be taken in each square, from which the mean film thickness shall be calculated. No more than 20 percent of the mean film thickness measurements shall be below the specified thickness. No single measurement shall be below 80 percent of the specified film thickness. Total dry film thickness greater than twice the specified film thickness shall not be acceptable. Areas where the measured dry film thickness exceeds twice that specified shall be completely redone unless otherwise approved by the Engineer. When measured dry film thickness is less than that specified additional coats shall be applied as required.
- E. Holiday Testing: Holiday test painted ferrous metal surfaces which will be submerged in water or other liquids, or surfaces which are enclosed in a vapor space in such structures. Mark areas which contain holidays. Repair or repaint in accordance with paint manufacturer's printed instructions and retest.
  1. Dry Film Thickness Exceeding 20 Mils: For surfaces having a total dry film thickness exceeding 20 mils: Pulse-type holiday detector such as Tinker & Razor Model AP-W, D.E. Stearns Co. Model 14/20, shall be used. The unit shall be adjusted to operate at the voltage required to cause a spark jump across an air gap equal to twice the specified coating thickness.
  2. Dry Film Thickness of 20 Mils or Less: For surfaces having a total dry film thickness of 20 mils or less: Tinker & Razor Model M1 non-destructive type holiday detector, K-D Bird Dog, shall be used. The unit shall operate at less than 75-volts. For thicknesses between 10 and 20 mils, a non-sudsing type wetting agent, such as Kodak Photo-Flow, shall be added to the water prior to wetting the detector sponge.
- F. Paint manufacturer or his representative shall provide their services as required by the Engineer. Services shall include, but not be limited to, inspecting existing paint, determination of best means of surface preparation, inspection of completed work, and final inspection of painted work 11 months after the job is completed.

**3.05 PROTECTION OF ADJACENT PAINT AND FINISHED SURFACES**

- A. Use covers, masking tape, other method when protection is necessary, or requested by Owner or Engineer. Remove unwanted paint carefully without damage to finished paint or surface. If damage does occur, repair the entire surface adjacent to and including the damaged area without visible lapmarks and without additional cost to the Owner.
- B. Take all necessary precautions to contain dispersion of sandblasting debris and paint to the limits of the work. Take into account the effect of wind and other factors which may cause dispersion of the sandblasting debris and paint. Suspend painting operations when sanding debris or paint cannot be properly confined. Assume all responsibilities and cost associated with damage to adjacent structures, vehicles, or surfaces caused by the surface preparation and painting operations.

**3.06 PIPING AND EQUIPMENT IDENTIFICATION**

- A. Piping and equipment identification shall be in accordance with Section 15030, Piping and Equipment Identification Systems.

**3.07 SCHEDULE OF COLORS**

- A. Match colors indicated. Piping and equipment colors are indicated in Section 15030. Colors which are not indicated shall be selected from the manufacturer's full range of colors by the Engineer. No variation shall be made in colors without the Engineer's approval. Color names and numbers shall be identified according to the appropriate color chart issued by the manufacturer of the particular product in question.

**3.08 WORK IN CONFINED SPACES**

- A. Provide and maintain safe working conditions for all employees. Supply fresh air continuously to confined spaces through the combined use of existing openings, forced-draft fans and temporary ducts to the outside, or direct air supply to individual workers. Exhaust paint fumes to the outside from the lowest level in the contained space. Provide explosion-proof electrical fans, if in contact with fumes. No smoking or open fires will be permitted in, or near, confined spaces where painting is being done. Follow OSHA, state and local regulations at all times.

**3.09 OSHA SAFETY COLORS**

- A. Paint wall around wall-mounted breathing or fire apparatus with the appropriate safety red color; area not exceed 2-feet wide by 3-feet high, unless apparatus covers the area. Fire apparatus include fire hoses, extinguisher, and hydrants.
- B. Paint hazardous areas and objects in accordance with OSHA regulations.

**TABLE 9-1  
PAINTING SCHEDULE**

<b>SURFACE</b>	<b>APPLICATION</b>	<b>PAINTING SYSTEM &amp; NO. OF COATS</b>	<b>PRODUCT REFERENCE (TABLE 9.2)</b>	<b>TOTAL MIN. DRY FILM THICKNESS (MILS)</b>
<u>Metals</u>				

**TABLE 9-1  
PAINTING SCHEDULE**

Interior and exterior nonsubmerged (gloss)	All new blowers, pumps, motors and mechanical equipment, piping, etc.	1 coat epoxy polyamide primer	104	4-6
		1 coat epoxy polyamide	102	4-6
		1 coat aliphatic polyurethane	115	3-5
Interior insulated		1 coat acrylic latex	103	4
Submerged water	All metal piping, and mechanical equipment, etc.	2 coats NSF approved epoxy polyamide	105	4-6/coat
Submerged Wastewater		2 coats high solids epoxy	119	8-10/coat
Steel doors, windows and door frames, steel stairs, monorails, structural steel, misc. metals (steel)		1 coat epoxy polyamide	102	5-8
		1 coat aliphatic polyurethane	115	3-4
Aluminum surfaces in contact with concrete		2 coats coal tar	107	26
Shop Primed Structural Steel	Pre-Engineered Buildings	1 barrier coat	113	2-3
		1 coat epoxy	114	3-4
		1 coat epoxy	120	3-4
<b>SURFACE</b>	<b>APPLICATION</b>	<b>PAINTING SYSTEM &amp; NO. OF COATS</b>	<b>PRODUCT REFERENCE (TABLE 9.2)</b>	<b>TOTAL MIN. DRY FILM THICKNESS (MILS)</b>

1. Painting manufacturer shall verify compatibility of containment liner and chemical to be contained. Where incompatible substitute a compatible coating system.

**TABLE 9-2**  
**PRODUCT LISTING**

REF.	SYSTEM	PURPOSE	PRODUCT			
			<u>Themec Series</u>	<u>PPG/AMERON</u>	<u>CARBOLINE</u>	<u>Sherwin-Williams</u>
101	Acrylic filler	Primer-sealer	130-6601	BLOXFIL 4000	Sanitile 100	Cement-Plex 875
102	Epoxy polyamide	Finish coat semi-gloss or gloss	N69	AMERLOCK 2	Carboguard 890	Dura-Plate 235
103	Acrylic latex	Sealer	1028/1029	PITT TECH PLUS	Carbocrylic 3359DTM	DTM Acrylic Primer/Finish
104	Epoxy Polyamide – metal	Primer	66	AMERCOAT 385	Carboguard 893SG	Macropoxy 646
105	Epoxy	Primer/Finish	20	AMERLOCK 2	Carboguard 561/56LT	Macropoxy 646 PW
106	Coal tar epoxy	Finish high-coat build	46H-413	AMERCOAT 78HB	Bitumastic 300M	Hi-Mil Sher Tar Epoxy
107	Coal tar	Sealer	46-465	AMERCOAT 78HB	Bitumastic 300M	Hi-Mil Sher Tar Epoxy
108	Alkyd-medium oil	Finish coat	2H	DEVGUARD 4308	Carbocoat 8215	Industrial Enamel
109	Alkyd-long oil	Finish coat	1029	DEVGUARD 4308	Carbocoat 8215	Industrial Enamel
110	Epoxy polyamide	Primer	66-1211	AMERCOAT 385	Carboguard 893SG	Macropoxy 646
112	Epoxy polyamide	Sealer	66-1211	AMERCOAT 385	Carboguard 893SG	Macropoxy 920 Pre-Prime
113	Urethane	Barrier coat	530	AMERLOCK SEALER	Rustbond	–
114	Polyamine Epoxy	Intermediate coat	27	AMERLOCK 385	Carboguard 893SG	–
115	Aliphatic Polyurethane	Finish coat	1074 or 1075	AMERCOAT 450 HS	Carbothane 134HG	Acrolon 218HS
116	Acrylic epoxy	Finish coat	113 or 114	AQUAPON WB	Sanitile 255	Water-Based Catalyzed Epoxy
117	Epoxy block filler	Sealer	1254	AMERLOCK 114	Sanitile 600	Kem Cati-Coat HS Epoxy Filler
118	Catalyzed epoxy	Finish coat	84	AMERLOCK 2/400	Carboguard 890	Macropoxy 646
119	High solids epoxy	Finish coat	104	AMERLOCK 400	Carboguard 890	Dura-Plate 235
120	Epoxy	Top coat	N69	AMERLOCK 2/400	Carboguard 890	–

- END OF SECTION -

THIS PAGE LEFT BLANK INTENTIONALLY



SECTION 11461

CIRCULAR SECONDARY CLARIFIER EQUIPMENT

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall remove the existing clarifier equipment from the clarifier structure for rehabilitation by the manufacturer, Walker Process Equipment and replace the equipment in working condition. The rehabilitated equipment and all new parts shall be installed in working condition. The Contractor is responsible for shipment of this equipment to and from Walker's repair facility.
- B. The items included in the rehabilitation of the equipment are listed in the Walker Proposal No. EWB091418 (included in this section and are covered by the Allowance). The Contractor is responsible to furnish, install, test, and place in acceptable operation, all clarifier equipment, complete with all accessories, special tools, mountings, anchor bolts and other appurtenances as specified herein, as shown on the Contract Drawings, and as required for a complete and operating installation.
- C. All existing clarifier Walker Process Equipment shall be sandblasted clean and painted including but not limited to the center feed well, walkway bridge, drive unit, scum removal equipment, and solids collection mechanism.
- D. All installation, reconnection and repair of the existing clarifier equipment is included in the project scope.
- E. See Specification Section 01210 Allowances for additional information.
- F. See all notes associated with clarifier work on the Contract Drawings.

1.02 OPERATING CONDITIONS AND PERFORMANCE REQUIREMENTS

- A. The rehabilitated clarifiers equipment shall operate to the manufacturers specifications after startup is completed.

1.03 SUBMITTALS

- A. In addition to the requirements of Section 01300, Submittals, Shop Drawings shall include:
  - 1. Upon approval of Shop Drawings, the manufacturer shall submit final drawings of the clarifier equipment.

1.04 WARRANTY AND GUARANTEE

- A. Warranty and Guarantee shall be for one (1) year.

## PART 2 -- MATERIALS

### 2.01 MANUFACTURERS

- A. The materials covered by these Specifications are intended to be of proven reliability and as manufactured by reputable manufacturers having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with the best practices and methods and shall operate satisfactorily when installed as shown on the Contract Drawings and operated per manufacturer's recommendations.
- B. The existing clarifier equipment is Walker Process Equipment.

### 2.02 REHABILITATION INFORMATION

- A. See Walker Process Proposal No. EWB091418 at the end of this Specification Section for a complete Scope of Supply of items included in the proposal to be completed by Walker. The Allowance Item only covers work included in the proposal.

### 2.03 SCUM SPRAY SYSTEM

- A. The Walker Process proposal includes the scum/water spray system within the clarifier, but the Contractor is responsible for the following items associated with this system.
  - a. Locating the existing plant NPW main on site, tapping the main with a 3"x2" tapping sleeve and valve, installing new 2" SDR-21 PVC NPW main from the tap location to the clarifier, up the clarifier wall and making the final connection to the Walker scum/water spray system.
  - b. All couplings, claps, standoffs, etc. required for installation of this NPW main is included in the project cost.

### 2.04 EFFLUENT WEIR AND SCUM BAFFLE

- A. The existing effluent weir and scum baffles shall be protected during installation of clarifier equipment. Should they need to be removed or are damaged during construction. They shall be reinstalled or replaced to existing elevations. This is a no cost item.

### 2.05 ELECTRICAL AND CONTROL REQUIREMENTS

- A. All electrical conduits, couplings, appurtenances, etc. required to remove and reinstall the existing clarifier equipment is included in this project scope.
- B. All existing lighting and electrical outlets associated with the clarifiers are to be removed and reinstalled. No new lighting is included in this project scope.
- C. Contractor shall coordinate with the electrical and instrumentation plant staff prior to disconnecting and reconnecting the existing equipment from the WWTP system and network.

### 2.06 SPARE PARTS

- A. No spare parts are included in this project scope.

## PART 3 -- EXECUTION

### 3.01 MANUFACTURER'S FIELD SERVICES

- A. The services of a qualified manufacturer's technical representative is included in the Walker Process Proposal and this representative shall be on site for installation (is required) and startup of the clarifier equipment.

### 3.02 FIELD TESTING

- A. The rehabilitated equipment shall be field tested by the Contractor in accordance with the instructions and drawings of the manufacturer.
- B. Solids collector mechanisms shall be field tested, after erection, and in the presence of the Engineer and manufacturer's representative to confirm and verify the structural and mechanical compliance to the torque requirements specified. The field acceptance test shall include checking the operation of the warning and drive shut-down circuitry.
  - 1. To accomplish such a test, the Contractor shall be required to secure the ends of the truss arm(s) to the tank floor. A load shall then be manually applied through the drive mechanism until the specified "Design Torque" is indicated on an approved testing gauge. Complete test procedures and apparatus shall be submitted to the Engineer for approval prior to testing.
  - 2. When more than one clarifier mechanism is being provided, a field test of torque capability shall be required on one of the collecting mechanisms (to be chosen by the Engineer). If the torque test fails on the chosen clarifier, all collecting mechanisms shall be tested at no additional cost to the Owner.
- C. Field tests for the clarifier equipment shall be conducted with the clarifier full to the weir elevation with plant effluent water. The Contractor shall provide all temporary pumps and piping for filling the clarifier with plant effluent water for testing. Contractor may complete field tests with the plant effluent water used to check water tightness of structures as approved by the Engineer.
  - 1. The Contractor shall demonstrate that the solids collection mechanism operates properly with plant effluent water.
  - 2. The Contractor shall demonstrate that the scum removal equipment properly removes scum from the clarifier surface.
- D. The scum removal equipment shall function properly with no mechanical problems for a period of 30 days before the scum removal equipment is accepted.



Division of McNish Corporation

Dedicated to the  
Water and  
Wastewater Industry

**Walker Process Equipment**

Division of McNish Corporation  
840 North Russell Avenue  
Aurora, Illinois 60506-2853

E-Mail: [walker.process@walker-process.com](mailto:walker.process@walker-process.com)  
Website: [www.walker-process.com](http://www.walker-process.com)

Phone: 630-892-7921  
Fax: 630-892-7951

September 19, 2018

**TO: BIDDING CONTRACTORS  
LEXINGTON, KY – WEST HICKMAN**

**PROJECT: Clarifier Rehabilitation  
QUOTE DATE: September 19, 2018**

**PROPOSAL NO.: EWB091418**

Ladies/Gentlemen

We are pleased to submit this proposal as our offer to sell and furnish the following equipment:

**Clarifier Rehabilitation of Existing Walker Process Clarifier at West Hickman Waste  
Treat Facility Clarifiers Number 7 and Number 8.**

This proposal is divided into the following sections that together form our complete proposal:

Pricing Summary	Pg 2-3
Scope of Supply and Clarifications	Pg 4
General Items	Pg 5-6
Terms and Conditions of Sale	Pg 7-9
Mechanical Warranty	Pg 10

If we can furnish any clarifications or additional information, please contact Joe Strehl with Dwight Thompson Company at 859-351-0850. We look forward to the opportunity of working with you in the execution of this project.

Sincerely,

**WALKER PROCESS EQUIPMENT**  
Division of McNish Corporation

Ed Beverly  
After Market Manager

**PRICING SUMMARY**

Listed below is a summary of prices for equipment as noted within this proposal. The prices are for equipment as described herein, F.O.B. shipping point with freight prepaid via truck, exclusive of any taxes. Prices quoted herein are based upon the estimated schedules shown, and receipt of approved submittal drawings in our factory within six (6) weeks from the date of our transmittal letter.

**NOTE:** Please refer to the following pages for clarifications to our scope of supply.

<b>Clarifier #7 and #8 Rehab for the price of .....</b> \$ _____
--

**EXISTING STRUCTURE NOTE:** The Contractor shall be solely responsible for measuring and providing Walker Process Equipment, a division of McNish Corporation ("WPE") with accurate as built dimensions for all existing structures where WPE is furnishing equipment. This information must be made available to WPE in a timely manner to avoid delaying the equipment delivery schedules outlined within this proposal. In the event that dimensions are not provided or the provided dimensions are in error, which results in modifications to either the equipment or the adjacent structures, the Contractor shall be solely responsible for all labor, materials and associated costs to correct the resulting situation.

**TIME OF ACCEPTANCE:** This offer to sell is subject to receipt of your purchase order on or before October 20, 2018.

The number of this proposal must be referenced in the Purchaser's purchase order. The prices quoted in this proposal are based upon and subject to Purchaser's acceptance of the Terms and Conditions of Sale attached to this proposal. WPE reserves the right to change the prices quoted if the subsequent Purchase Order changes or modifies in any manner, the Scope of Supply or the attached Terms and Conditions of Sale, unless WPE's written consent is first obtained. This proposal shall become a binding contract for the scope of equipment supply and mechanical warranty responsibility, upon acceptance by Purchaser and approval by WPE as provided for in the Terms and Conditions of Sale.

**TERMS OF PAYMENT:**

100% net 30 days upon shipment of materials, or upon offer of shipment.

Invoices not paid within 30 days from date of invoice will bear interest at the rate of two percent (2%) per month.

These terms are completely independent from, and in no way contingent upon, when you receive payment from the Owner and/or prime contractor. Walker Process prices do not include sales, use, excise, or other similar taxes, and all such taxes shall be paid by the Purchaser. Our offering does not include bonds of any kind, which the purchaser may require.

## **PRICING SUMMARY - CONTINUED**

### **PRICE ADJUSTMENTS**

Due to continuing escalation in the cost of materials used by Seller to manufacture its products, the prices quoted are subject to escalation after Seller's receipt of Buyer's order through the date Seller is first able to purchase the materials required to manufacture the goods being sold to Buyer hereunder. Price increases based on escalation shall be determined by the applicable material indexes.

Increases in costs incurred by Seller from third party vendors and/or fabricators that exceed 2% of the cost used by Seller to determine the price quoted to Buyer for items not manufactured by Seller or for fabrication work performed with respect to the goods purchased by Buyer shall be passed through to Buyer based upon the actual price increase made by such third party.

Seller, in its sole discretion, shall determine whether to make price adjustments based on escalation or third party price increases. In either event, Seller shall give Buyer written notice of all price adjustments made pursuant to the foregoing provision. If Buyer does not agree to accept such price adjustments, Seller reserves the right to cancel this order, in which event Seller shall have no further obligation or liability to Buyer, provided, however, that Buyer shall be liable to Seller for the agreed upon purchase price for any goods or services received by Buyer from Seller prior to such cancellation.

### **TERMS AND CONDITIONS**

Please refer to the attached Terms and Conditions of Sale, which form an integral part of this proposal.

### **FIELD SERVICE**

Our prices include the services of a factory field service technician for checkout, initial start-up, testing, commissioning, and/or instruction of plant personnel as noted in the "Scope of Supply". Refer to the attached General Items regarding our Terms of Field Service.

**SCOPE OF SUPPLY**

**WALKER PROCESS WILL SUPPLY:**

Rehabilitation of two (2) existing Walker Process Clarifiers clarifiers 7 and 8 originally supplied by WPE under contract serial number P00731.

**Clarifier No. 7** – One (1) Skimmer Wiper Assembly – One (1) set of U-bolts for suction pipes and miscellaneous fasteners.

**Clarifiers No. 7 & No. 8** - One (1) set of 304 stainless steel squeegees with 304 stainless steel fasteners for each clarifier – Drive Parts consisting of Two (2) sets of horizontal & vertical races – Two (2) sets 136 1-1/2" ball bearings – Two (2) sets of upper and lower felt seals – Two (2) sets of dust shields – Two (2) lower pinion bearings.

**Clarifier No. 7 & 8** - will each receive a water spray system that is to be mounted to the existing walkway/access bridge and will consist of 1" and 2" 304 stainless steel piping and fittings, spray nozzles with adjustable ball fittings. It will be the contractor's responsibility to bring the water source to the water spray system.

**SHOP PAINTING:** – One (1) shop prime coat of Sherwin-Williams Macropoxy 646 PW, Red Oxide; 5.0 to 10.0 mils dry film thickness, followed by one (1) field finish coat of Acrolon 218 HS, ANSI #70 Gray, 3.0 to 5.0 mils to dry film thickness.

Aluminum, stainless steel, galvanized steel, plastic and other special materials will not be shop painted.

**SPARE PARTS:** None

**FIELD SERVICE:** As required, but not to exceed one (1) trip and one (1) day of mechanical service for each clarifier.

**ESTIMATED SCHEDULE:** Based on current deliveries by suppliers and our projected work load, we estimate that we can ship fabricated materials in accordance with the schedules listed below. Approval Schedule is shown in weeks after receipt of order with complete information. SCHEDULE COMMITMENTS ARE SUBJECT TO REVISION AND MUST BE CONFIRMED AT TIME OF ORDER.

    Submittal of Approval Drawings if required . . . . . 5 to 6 weeks  
    Shipment, after Receipt of Approval . . . . . 10 to 12 weeks

**EXCLUSIONS:** Although shown on the plans and/or specified, the following are not included in this offering:

1. Any item(s) not specifically indicated as provided in the above scope of supply

## GENERAL ITEMS

**SAFETY REGULATIONS:** Equipment and specified accessories supplied by WALKER PROCESS EQUIPMENT Division of McNish Corporation (WPE) will comply with the Occupational Safety and Health Act of 1970 as may be amended to date of order. Purchaser will be responsible for specifying items required by the Act, which depend upon the particular service or operating methods of the Owner.

**PAINTING:** If Purchaser's equipment has shop painting included in the price, as outlined in the main body of this proposal, please take note of the following:

Our prices are based on shop surface preparation and shop coat(s) as outlined in the main body of this proposal. In the event that an alternative paint system is selected by the Purchaser, WPE requires written notification and data from Purchaser on the alternate paint selected. With Purchaser's agreement, WPE will then either adjust our price as may be necessary to comply or ship the material unpainted if compliance is not possible, due to application problems or environmental controls.

Shop primer paint is intended to serve only as minimal protective from the time of application (usually for a period not to exceed 30 days). Therefore, it is imperative that the finish coat normally be applied within 30 days of shipment on all shop coated surfaces. Without final coating(s) protection, primer degradation will likely occur after this period, which in turn may require renewed field surface preparation and field coating by Purchaser and/or Field Painting Contractor. Unless noted otherwise, shop prime paint will be held back 3 inches from areas that require field welding.

All field surface preparation, field paint, field touch-up, and field repair to shop coated surfaces are not by WPE. WPE will not be responsible for condition of shop primed or shop finished painted surfaces after equipment leaves its shops. Purchaser is invited to inspect painting in our shops for proper surface preparation and shop coating application prior to shipment.

WPE assumes no responsibility for field surface preparation or field touch-up of shop coatings related to shipping damage or handling damage. Any bruises, mars and/or scratches caused by loading, shipping, unloading and handling the equipment must be immediately touched up in the field by Purchaser and/or Field Painting Contractor prior to any equipment storage or equipment installation. WPE will not accept any responsibility for rusting due to equipment not receiving additional coats in the field by the Purchaser and/or Field Painting Contractor.

Purchaser must advise WPE in writing of any and all concerns regarding the shop applied surface preparation and/or the shop applied coating(s) before equipment is installed. WPE will not accept any back charges related to either the shop applied surface preparation or the shop applied coating(s) after equipment has been installed.

Application of field coating(s) shall be in strict compliance with the coating manufacturer's recommendations. Prior to application of field coat(s), the Purchaser and/or Field Painting Contractor must ensure that the maximum recoat time for the shop coating, as set forth by the shop coating manufacturer, will not be exceeded. If the maximum recoat time will be exceeded, the Purchaser and/or Field Painting Contractor shall consult the shop coating manufacturer for necessary surface preparation prior to applying subsequent top coats. Application of field coating(s) shall be construed as the Purchaser and Field Painting Contractor's full acceptance of both the shop applied surface preparation and the shop applied coating(s). WPE will not accept any back charges related to either the shop applied surface preparation or the shop applied coating(s) after field coatings are applied.

All finish coats are not by WPE unless otherwise stated in the main body of this proposal. Finish coats must be the same type and by the same paint manufacturer as the prime coat, to ensure optimum compatibility and avoid invalidation of the paint warranty. The Purchaser and Field Painting Contractor are responsible that the field finish coating system is fully compatible with the shop applied coating(s).

Painting of fasteners and other touch-up to painted surfaces will be by Purchaser and/or Field Painting Contractor after mechanism erection.

No shop coatings are used by WPE on aluminum, stainless steel or other non-ferrous metals, or on galvanized metal, unless specifically designated.

All pipes, tubes, etc., 20" in diameter and larger, which receive shop surface preparation as outlined in the main body of this proposal, receive both interior and exterior shop surface preparation and shop coating. For pipes, tubes, etc., smaller than 20" in diameter, shop surface preparation and shop coating only extends into the ends of the pipes, tubes, etc., as far as the gun will reach without inserting the gun within the pipe or tube.

Motors, gear motors, and other components not manufactured by WPE will be painted solely with the originating manufacturer's standard paint system. No additional shop coatings are applied by WPE for components not manufactured by WPE.

Prior to field sandblasting, the Purchaser and/or Field Painting Contractor shall protect all gears, motors, drives, mixers, shafting, electrical controls, seals, breather vents and miscellaneous items of equipment that could be damaged by sandblasting or entry of sand. Painting can damage seals and plug breather vents on the drive units. WPE will not be responsible for leaks or loss of lubricant due to field applied paint of seals and/or vents.

Evaluation of dry film coating thickness complies with the requirements of industry standard SSPC-PA2, "Paint Application Specification #2 Measurement of Dry Coating Thickness With Magnetic Gages."



## GENERAL ITEMS

**ANCHORAGE:** Note that existing concrete tanks may require concrete modifications in the areas where new anchors will be placed in order to meet current design codes. Sometimes the required modification may be extensive. Foundation loads from the equipment provided will be submitted, but WPE is not responsible for cost, design, or the work for the concrete modification.

WPE is not responsible for determining the condition, adequacy, capacity, or suitability of existing anchors or concrete if the existing anchors are to be reused.

**STAINLESS STEEL:** Stainless steel products that have been subjected to the pickle, passivate and electro-polish process are more resistant to rust and corrosion than untreated products, however this does not guarantee that the products will not rust, corrode or discolor. Due to the many circumstances outside of the control of Walker Process Equipment Division of McNish Corporation and our fabricators all present and prospective purchasers of stainless steel product are cautioned about possible conditions that affect their application if cosmetic appearance is required. McNish Corporation and Walker Process Equipment Division of McNish Corporation make no warranty, expressed or implied, as to the rust, corrosion or discoloration resistance of stainless steel products supplied by Walker Process Equipment Division of McNish Corporation.

**ADHESIVE (EPOXY) ANCHORS:** WPE specifically excludes all responsibility for field installation of adhesive anchors, all field installer certifications of adhesive anchors, and all equipment and appurtenances required to field install the adhesive anchors.

**RECEIVING MATERIAL:** Upon receipt of each shipment, the Contractor/Purchaser should check the goods received against the tally on the PACKING LIST provided by WPE. If any items are missing, an appropriate notation should be made on the shipping papers and WPE should be notified immediately. Shipments for which no shortages are reported to WPE within fourteen (14) days of delivery to the jobsite will be considered complete as listed on the PACKING LIST.

**STORAGE/PROTECTION:** All motors, drives, shipping cartons containing sensitive equipment, and any other items that would reasonably deem special care be exercised in storage must be stored inside or adequately protected from moisture, and exposure. WPE will not be responsible for damage or deterioration due to improper handling, exposure or inadequate protection.

**FIELD INSTALLATION:** The equipment described and offered in this proposal is to be field installed by OTHERS. WPE will provide General Installation instructions, as a guide only, to assist installer who is presumed to be experienced, competent and equipped to handle and install the equipment as offered herein. It is the Contractor's responsibility to furnish any erection aids he deems necessary.

**GENERAL ITEMS NOT INCLUDED:** Unless specifically indicated to the contrary in the scope, the following items are excluded from our offering:

INSPECTION FOR DAMAGE UPON ARRIVAL, UNLOADING, HAULING OR STORAGE, SHIMS/SHIM SETS, ALL ELECTRIC CONTROLS, CONDUIT, WIRING AND ALARMS, GREASE FITTINGS, GREASE LINES, LUBRICATING OIL OR GREASE, INFLUENT PIPE, SLUDGE OR SCUM PIPING AND FITTINGS AND VALVES; FIELD PAINTING OR WELDING, CONCRETE WORK, INSTALLATION OF EQUIPMENT, ANCHORAGE TEMPLATES, LABOR AND MATERIALS TO REPAIR DEFECTS CAUSED FROM SHIPPING AND HANDLING AND INSTALLATION, HANDRAILS AND WALKWAYS NOT LOCATED ON THE EQUIPMENT, TOOLS, SPARE PARTS, VIDEO TAPES/TAPING OF INSTRUCTIONS/TRAINING SESSIONS.

*If this proposal includes an offer for WPE to provide field inspection services of existing equipment, the price shown does not include any material or labor necessary to provide safe access to all areas that require visual inspection, such as scaffolding, ladders, lifts, lighting, safety harnesses, testing for air quality in confined areas, breathing apparatus, safety observers, safety permits or any other materials or labor required for the inspections. The contractor is solely responsible to coordinate the draining and cleaning of all tanks and structures to be inspected and to provide all material and labor required to assist WPE with the inspection.*

*When field service is requested to inspect existing structures, the following conditions shall apply:*

- The field inspection services will be performed to generally accepted industry professional standards and WPE will use ordinary skill in providing field inspection services.*
- The Customer shall provide well-ventilated access to all areas requiring inspection and will provide all required scaffolding, ladders, safety equipment, tools, surveying equipment, labor assistance etc., required to perform the field inspection services.*
- The Customer shall completely drain and clean all tanks, structures and access areas prior to WPE providing field inspection services.*
- The Customer shall understand that WPE personnel are not corrosion experts, concrete experts, coatings experts, or failure analysis experts; All field inspections are strictly limited to "visual" observations and do not encompass measuring structural members or structural analysis.*
- The Customer shall satisfy itself as to the adequacy and accuracy of the information provided by WPE personnel and shall take complete responsibility as to the use of the information provided by the WPE personnel and the information contained within the WPE field inspection report, which will be provided by WPE to the Customer.*
- WPE makes no warranty of any kind, expressed or implied with respect to the field inspection services.*

## TERMS AND CONDITIONS OF SALE

1. **Controlling Terms.** All purchase orders submitted to Walker Process Equipment, a division of McNish Corporation (hereinafter referred to as "Seller") by a purchaser (hereinafter referred to as the "Buyer") for products and/or services sold by Seller shall constitute acceptance of Seller's Bid Proposal, these Terms and Conditions of Sale and Seller's Mechanical Warranty (hereinafter referred to, collectively, as "Seller's Contract Documents"). In the event any provision of Buyer's purchase order conflicts with Seller's Contract Documents, the provisions of Seller's Contract Documents shall control. Any modifications, amendments or other changes to Seller's Contract Documents must be agreed upon in writing signed by Seller. Seller is neither a party to, nor shall Seller be bound by, the terms of any contract or agreements between Buyer and any other party. (Seller's Contract Documents and Buyer's purchase order are hereinafter referred to, collectively, as the "Contract").
2. **Acceptance of Purchase Orders.** All purchase orders received by Seller are subject to approval of Buyer's credit and is contingent upon Seller's receipt of written approval of all equipment submittals or written waiver thereof.
3. **Shipment and Delivery.** The shipping schedule set forth in Seller's proposal is based upon Seller's knowledge of the availability of materials at the time of quotation. Seller will use reasonable efforts to meet specified delivery dates, but such dates are estimates only and are not guaranteed. Seller reserves the right to make partial shipments and invoice Buyer for same. If Buyer delays shipment, Seller may invoice and the Buyer agrees to remit the amount due per terms as if the equipment had shipped. The Seller should not be liable for any delays beyond its reasonable control (i.e., force majeure) including inadequate or reduced supply, or excessive costs, of suitable materials.
4. **F.O.B. Point and Title.** Seller's delivery of goods to a carrier F.O.B. shipping point constitutes delivery to Buyer and will transfer all title, ownership, and possession of the goods to Buyer.
5. **Payment Terms.** Payment terms are independent of, and are not contingent upon, the time and manner in which Buyer receives payment from any other person. All accounts that remain unpaid after the due date will accrue interest at a rate of two percent (2%) per month (annual percentage rate of 24%), or the maximum interest rate permitted by law. Buyer shall pay all costs and expenses, including reasonable attorneys' fees, which are incurred by Seller to collect any past due accounts.
6. **Setoff.** Buyer shall have no right to setoff or deduct any sums owed to Seller under this Contract for any amounts that are in dispute between Seller and Buyer and relate to any other project or contract between Seller and Buyer. Any setoff so made shall constitute a default by Buyer under this Contract and Seller shall then be entitled to pursue all remedies available to Seller for such default, including, but not limited to, the Seller's right to stop performing Seller's obligations under this Contract.
7. **Taxes.** Prices quoted by Seller do not include any federal, state, local, sales, use, excise or other taxes. Any tax applicable to Buyer's purchase of Seller's goods shall be paid by Buyer directly to the appropriate governmental authority.
8. **Warranty.** Seller warrants all goods that it manufactures in accordance with the terms of Seller's Mechanical Warranty, a copy of which is attached hereto and made a part hereof (the "Warranty"). Seller reserves the right to declare the Warranty null and void upon the breach of any of Buyer's obligations under its Contract.
9. **Cancellation.** If Buyer requests or causes a cancellation of any work performed by Seller on Buyer's behalf, Buyer agrees to pay Seller for all costs and expenses incurred by Seller, plus overhead and profit, through and including the date of cancellation.
10. **Backcharges.** No back charges or delay in payment for goods or services furnished by Seller under this Contract shall be made by Buyer without Seller's advance written approval. If Buyer assesses back charges against Seller that are not approved in advance by Seller, Buyer shall be in breach of this

### **TERMS AND CONDITIONS OF SALE**

Contract and Seller shall have no further obligation to continue performing any further work or service for Buyer.

11. **Price Adjustment.** Increases in costs incurred by Seller from third party vendors and/or fabricators that exceed 2% of the cost used by Seller to determine the price quoted to Buyer for items not manufactured by Seller or for fabrication work performed with respect to the goods purchased by Buyer shall be passed through to Buyer based upon the actual price increase made by such third party.

12. **Indemnification.** Seller agrees to indemnify Buyer, hold Buyer harmless, and upon request, to defend Buyer from and against all damages, losses, liabilities, costs and expenses, including reasonable attorney's fees, incurred by Buyer and arising from any claims, demands and suits, for personal injury, death, or property damage caused by the acts or omissions of Seller, in whole or in part, in connection with Seller's furnishing of the goods and services by this Contract. Seller's maximum liability to Buyer hereunder shall not exceed the limits of Seller's insurance policies as evidenced by the Certificate of Insurance delivered by Seller to Buyer in connection with this Contract.

13. **Limitation of Liability.** Notwithstanding anything contained in this Contract to the contrary, Seller shall have no liability to Buyer for any consequential, incidental, indirect, liquidated, special, exemplary, and punitive damages arising from or alleged to arise from Seller's breach of this Contract, as Seller's sole liability to Buyer for breach of this Contract shall be for direct damages actually suffered or incurred by Buyer. Seller's liability to Buyer for warranty claims shall be solely as stated in Seller's Mechanical Warranty attached hereto and made a part hereof. Seller's maximum liability to Buyer for direct damages under this Contract shall be limited to, and shall not exceed, the purchase price of the goods and services furnished by Seller to Buyer under this Contract.

14. **Field Service.** Field service quoted is not supervisory but advisory only and is offered subject to the express agreement that our servicemen's function and responsibilities are limited to inspection, interpretation of assembly drawings and IOM manuals, and identification of materials for proper assembly and operation. In order to insure the availability of a servicemen, Buyer must provide Seller with a four (4) week advance notice to schedule service requests. If less than four (4) weeks-notice is given by Buyer, Seller cannot guarantee availability when requested, and also may result in premium charges to Buyer's account. In the event Seller's field service technician arrives when requested, and the jobsite is not ready for service, Seller shall deduct the days/trips from the allotted time included in our scope of supply, or invoice Buyer at the per diem rate plus actual travel expenses.

Any additional field service requested by Buyer shall be provided by Seller at a rate of \$1,000 per diem plus actual travel, housing and meal expenses. Consultation or advisory services of a process engineer or staff engineer within the continental limits of the United States will be charged at the rate of \$1,200 per diem plus actual travel, housing, and meal expenses. There will be no credit for using less days or trips than the amount identified within this proposal. The per diem rates quoted are for normal site work schedule, eight (8) hours per day, five (5) days per week; all overtime and Saturday work to be invoiced at one and one-half the per diem rate; Sunday and legal holiday work to be invoiced at double the per diem rate.

15. **Limitation of Actions.** Notwithstanding any statutory period of limitation to the contrary, and except as otherwise provided in Seller's Warranty, any action or claim against Seller by Buyer with respect to Seller's furnishing of goods must be brought within one (1) year from date of Seller's shipment or offer of shipment of the goods purchased by Buyer.


16. **Disputes and Governing Law.** All disputes and controversies arising between Seller and Buyer shall be settled by a court of competent jurisdiction in Kane County, Illinois. All agreements between Seller and Buyer shall be construed in accordance with, and governed by, the laws of the State of Illinois, and shall be construed to be between merchants.

**TERMS AND CONDITIONS OF SALE**

- 17. **Disclosure.** Seller is a Division of McNish Corporation. Goods or services to be provided by Seller pursuant to this Contract may include goods or services provided by another division of McNish Corporation.
- 18. **Invalidity.** If any provision of Seller's Contract Documents is held to be invalid or is otherwise rendered unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining provisions thereof.
- 19. **Binding Effect.** This Contract shall be binding upon, and inure to the benefit of, Seller and Buyer, and their respective successors, assigns, and legal representatives.
- 20. **Entire Agreement.** This Contract constitutes the entire agreement between Seller and Buyer, and supersedes all prior agreements, negotiations, and communications, whether oral or written, between Seller and Buyer with respect to the subject matter hereof.

**SELLER:**

WALKER PROCESS EQUIPMENT,  
Division of McNish Corporation

Signature:   
Name/Title: Ed Beverly/After Market Manager  
Date: September 19, 2018

**ACCEPTED BY BUYER:**

Name of Company: \_\_\_\_\_  
Authorized Signature: \_\_\_\_\_  
Name/Title: \_\_\_\_\_  
Date: \_\_\_\_\_

### MECHANICAL WARRANTY

Walker Process Equipment, division of McNish Corporation ("Seller") warrants, to Buyer that all products and parts of its manufacture ("Goods") are free from defects in material and workmanship on the date of shipment. Seller's obligation under this Mechanical Warranty is to replace or repair, at no charge to Buyer and the original user of the Goods, any Goods which proves to Seller's satisfaction to have a defect in material or workmanship that interferes with the mechanical operation of the Goods under normal use and service within one (1) year from date of initial operation of the Goods or fifteen (15) months from date of shipment, whichever time period first occurs (the "Warranty Period").

If, within the Warranty Period, Buyer gives Seller prompt written notice of any defects in the Goods, Seller shall then, as Buyer's sole remedy, repair or replace, any such Goods, which Seller determines, in its sole discretion, to have failed under normal use. Unless otherwise agreed to, in writing, by Seller, (i) all repairs or replacements shall be made F.O.B. Seller's manufacturing facility or other locations designated by Seller; and (ii) Buyer shall be solely responsible for the cost of any labor required in order to allow Seller to gain access to the Goods in order to allow Seller to assess the claimed defects; and (iii) Buyer shall be responsible for all costs of installation of all Goods replaced or repaired by Seller under this Warranty. If Seller determines that any claimed defect is not, in fact, covered by this Warranty, Buyer shall pay Seller its then customary charges for any repairs or replacements made by Seller. Any suit or action brought under this Warranty must be commenced not later than ninety (90) days after the expiration of the Warranty Period, notwithstanding any statute of limitations to the contrary. Buyer shall provide Seller with satisfactory evidence that all the Goods have been maintained in accordance with Seller's Instructions as stated in the Installation, operations and maintenance (IOM) manual provided by Seller to Buyer.

This Warranty does not apply to, and is rendered null and void by, any Goods which, after leaving Seller's manufacturing plant, are: (i) repaired or altered without Seller's prior written approval; or (ii) improperly stored, installed or operated, including any Goods operated beyond its rated capacity or without required safety devices and protective measures; or (iii) the subject of intentional or negligent misuse, misapplication, neglect, or accident; or (iv) installed contrary to Seller's instructions; or (v) the subject of start-up, inspections, or instructions in the operation or maintenance performed by any person who is not an authorized representative of Seller; or (vi) damaged from corrosion, erosion, or any other deterioration occurring after the Goods, or parts thereof, leave the point of manufacture; or (vii) not maintained in accordance with Seller's Instructions as stated in the Installation, Operation and Maintenance (IOM) Manual provided by Seller to Buyer.

This Mechanical Warranty shall not apply to products or parts which are not manufactured by Seller. Buyer's sole remedy for defective products and parts not manufactured by Seller shall be solely as provided under the warranty, if any, of the original manufacturer of such products and parts. All warranty claims for defective products and parts not manufactured by Seller shall be submitted directly to the original manufacturer for coverage.

The obligations of Seller under this Warranty are subject to, and contingent upon, Buyer not being in breach of any of its payment obligations to Seller for the Goods.

This Warranty is provided by Seller, and accepted by Buyer, in lieu of all other warranties and remedies, express or implied. Seller disclaims the implied warranties of merchantability and fitness for a particular purpose, and any implied warranties arising from course of performance, course of dealing, or usage or trade. Seller shall not be liable under this Mechanical Warranty to Buyer or any other party for direct, special, consequential, indirect or incidental damages of any kind, including, but not limited to, loss of profits. Seller's sole obligation and Buyer's exclusive remedy for warranty claims relating to any Goods is as stated in this Mechanical Warranty.

- END OF SECTION -

SECTION 15206

SLUICE GATES

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall install eight (8) sluice gates complete with all accessories, special tools, spare parts, mountings, anchor bolts and other appurtenances as specified herein, as shown on the Drawings, and as required for a complete and operating installation.
- B. New stainless steel gates will be provided to the Contractor and the cost of the gates should not be included in the base bid price.
- C. Locations, dimensions, design criteria, number required, etc. for sluice gates are indicated on the Drawings.
- D. Manual gate operators and electric gate actuators shall be removed and reinstalled (as needed) as part of this contract. It is not intended for any operators or actuators be purchased as part of this contract.
- E. The Contractor shall coordinate all details, locations, clearances, and other conditions of the sluice gate installation with Flow Splitter Boxes, so that the sluice gates function as part of a complete system.
- F. See Specification Section Part V Special Conditions and Section 01015 Owner Furnished Equipment and Services for additional information.

1.02 WARRANTY AND GUARANTEE

- A. Warranty and Guarantee of the newly installed gates shall be a period of one (1) year.

PART 2 -- PRODUCTS

2.01 GENERAL

- A. The Owner is providing eight (8) new stainless gates to the Contractor for installation.

2.03 MATERIALS

- A. See Appendix B for the approved sluice gate Shop Drawing.

PART 3 -- EXECUTION

3.01 MANUFACTURER'S FIELD SERVICES

- A. See Specification Section 01015 for manufacturer's representative contact information.

### 3.02 INSTALLATION AND TESTING

- A. Installation - The sluice gates shall be set carefully in the locations shown on the Drawings in accordance with the installation manual furnished by the gate manufacturer.
  - 1. The existing stems and wall-mounted guides shall be removed, reused, and reinstalled as required for proper installation of the gates.
  - 2. Floorstands, and wall brackets shall be secured in place with adequately sized anchor bolts.
  
- B. Testing - The completely assembled sluice gates, in vertical position, shall be inspected for proper seating.
  - 1. Seat facings shall be machined and wedges adjusted to exclude a 0.004-inch thickness gauge between the frame and disc seating surfaces.
  - 2. The gate disc shall be fully opened and closed in its guide system to ensure that it operates freely.
  - 3. Floor stands shall be operated to ensure proper assembly and operation.
  - 4. All gates shall receive a visual inspection by the Owner, Engineer and Manufacturer's representative after installation to received final approval and acceptance.
  - 5. All electrical and manual actuators shall be fully actuated to ensure propose installation.

### 3.03 PAINTING

- A. No painting is required as part of the gate installation.

- END OF SECTION -

**APPENDICES**

**WH WWTP FINAL CLARIFIERS NO. 7 & NO. 8 STRUCTURAL REPAIRS**

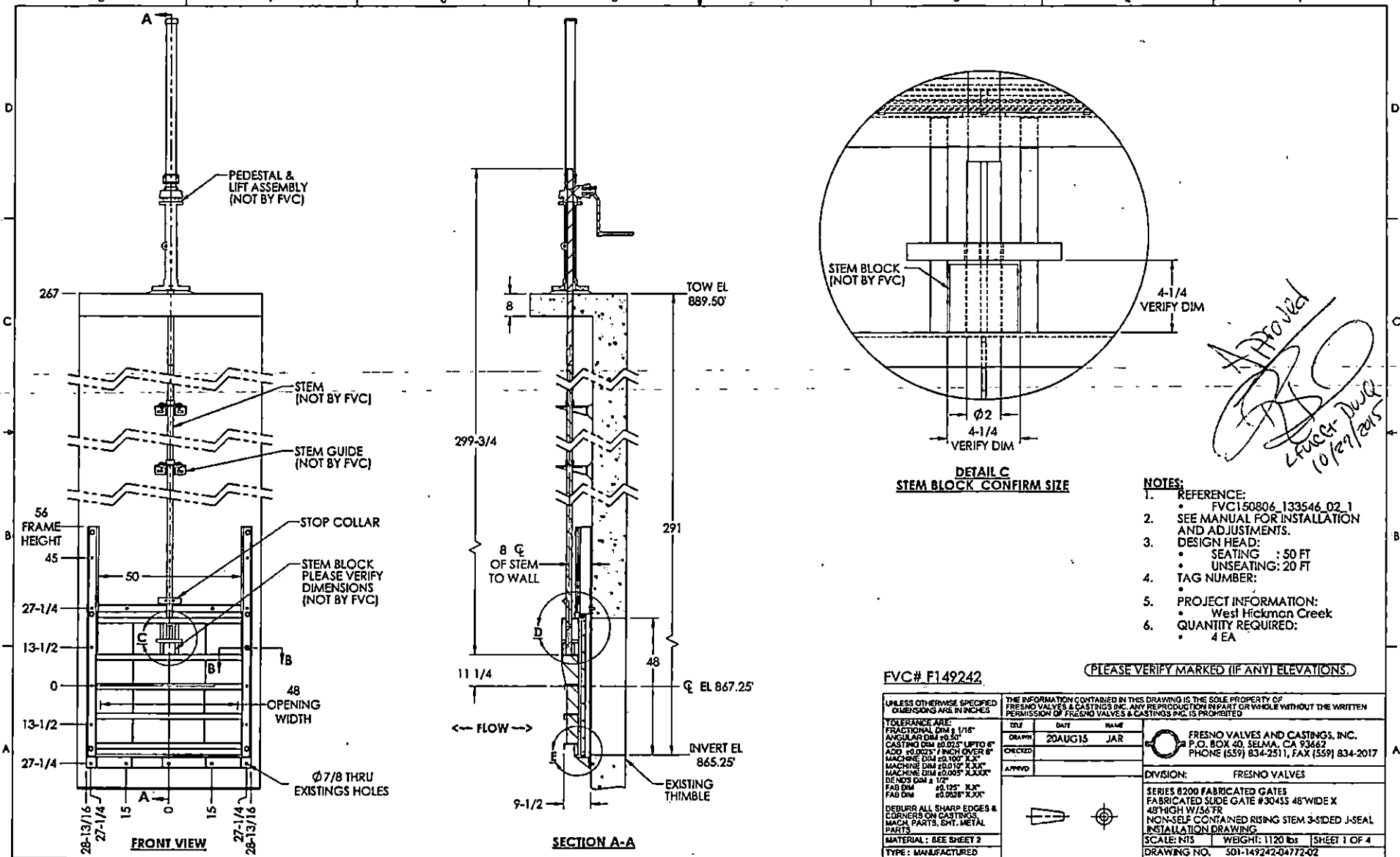


THIS PAGE LEFT BLANK INTENTIONALLY

**APPENDIX A**

THIS PAGE LEFT BLANK INTENTIONALLY

Last saved by 8/25/2015 9:20:34 AM by JohnAR



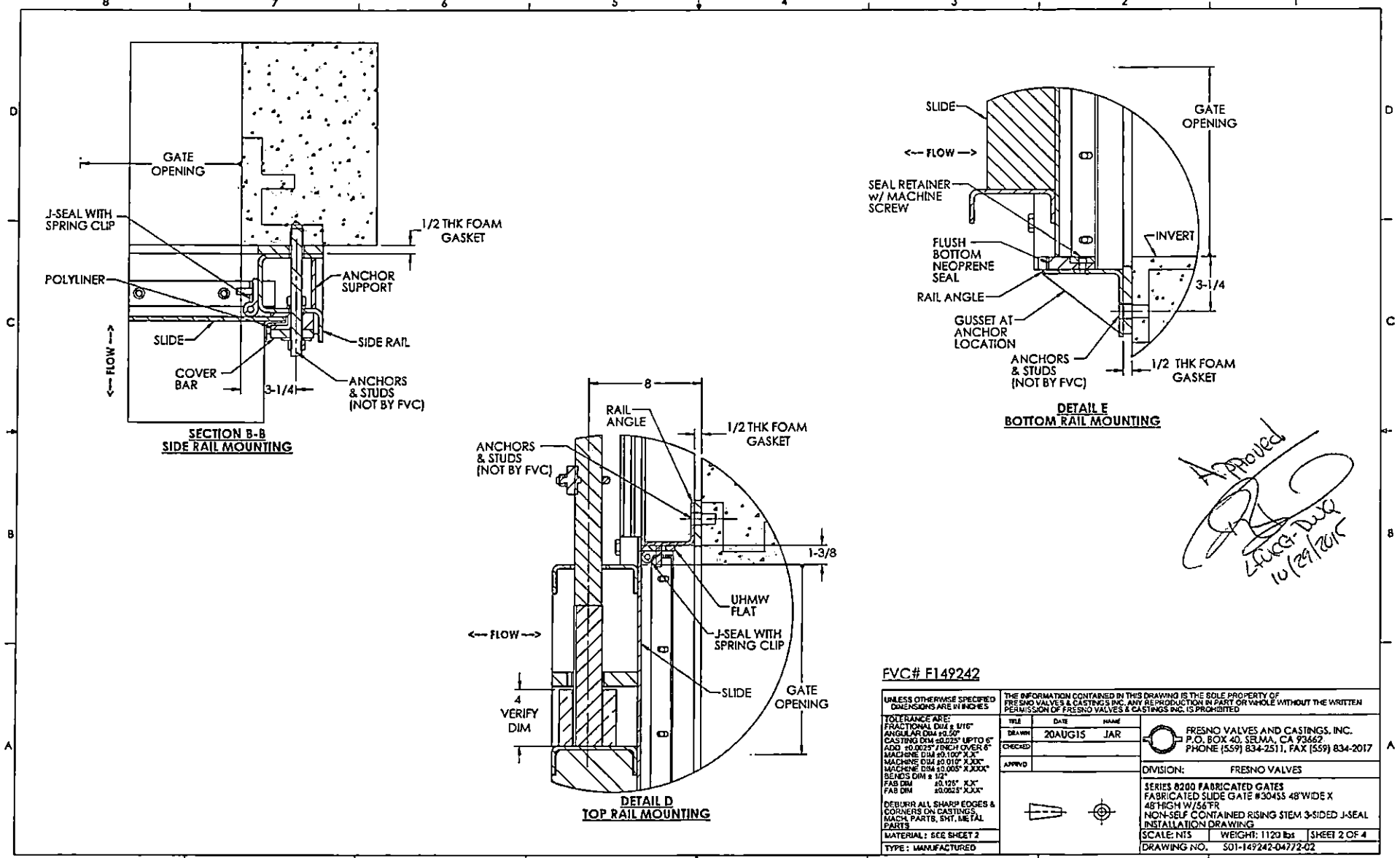
- NOTES:**
1. REFERENCE:
    - FVC150806\_133546\_02\_1
  2. SEE MANUAL FOR INSTALLATION AND ADJUSTMENTS.
  3. DESIGN HEAD:
    - SEATING : 50 FT
    - UNSEATING: 20 FT
  4. TAG NUMBER:
  5. PROJECT INFORMATION:
    - West Hickman Creek
  6. QUANTITY REQUIRED:
    - 4 EA

FVC# F149242

(PLEASE VERIFY MARKED (IF ANY) ELEVATIONS.)



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FRESNO VALVES & CASTINGS INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF FRESNO VALVES & CASTINGS INC. IS PROHIBITED.	
TOLERANCE ARE:	DATE	NAME	FRESNO VALVES AND CASTINGS, INC. P.O. BOX 40, SELMA, CA 93662 PHONE (559) 834-2311, FAX (559) 834-2017
FRACTIONAL DIM ± 1/16"	20AUG15	JAR	
ANGULAR DIM ±0.50°	CHECKED		
CASTING DIM ±0.025" UP TO 6"	APPROV		
ADD ±0.0025" FINCH OVER 6"			DIVISION: FRESNO VALVES
MACHINE DIM ±0.005" R.30°			SERIES B200 FABRICATED GATES
MACHINE DIM ±0.010" R.30°			FABRICATED SLIDE GATE #304SS 48" WIDE X
MACHINE DIM ±0.005" R.30°			48" HIGH W/56" FR
BENDS DIM ± 1/2"			NON-SELF CONTAINED RISING STEM 3-SIDED J-SEAL
FAB DIM ±0.125" R.30°			INSTALLATION DRAWING
FAB DIM ±0.005" R.30°			SCALE: NTS WEIGHT: 1120 lbs SHEET 1 OF 4
DEBURR ALL SHARP EDGES & CORNERS ON CASTINGS			DRAWING NO. 501-149242-04772-02
MACH PARTS, SHT. METAL PARTS			
MATERIAL : SEE SHEET 2			
TYPE : MANUFACTURED			

Last saved by 8/25/2015 9:20:34 AM by JohnAR



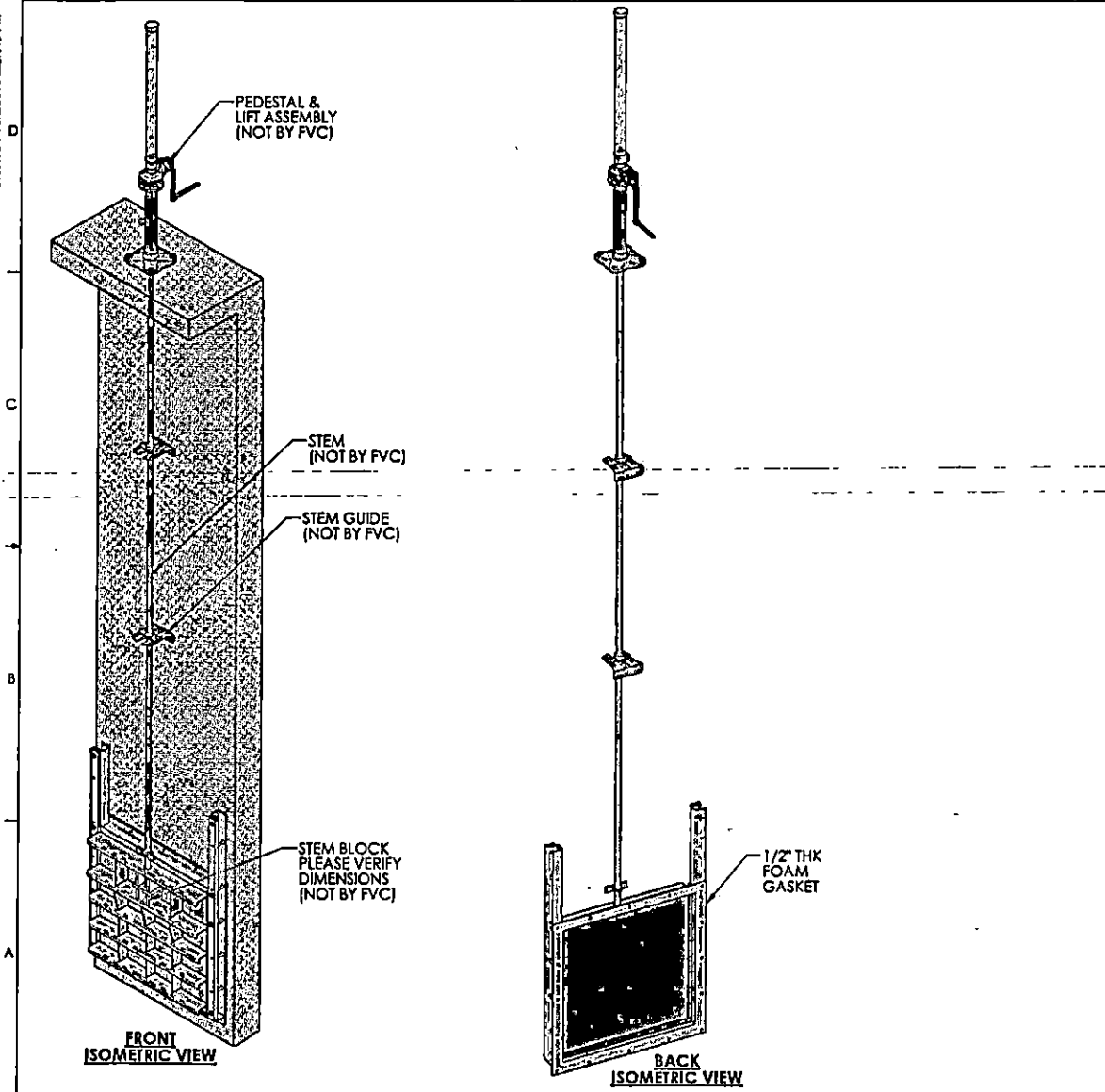
*Approved*  
*[Signature]*  
 4/22/2015  
 10/29/2015

VFC# F149242

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FRESNO VALVES & CASTINGS INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF FRESNO VALVES & CASTINGS INC. IS PROHIBITED	
TOLERANCE ARE: FRACTIONAL DIM ± 1/16" ANGULAR DIM ± 30" CASTING DIM ± 0.025" UP TO 6" ADD ± 0.0025" / INCH OVER 6" MACHINE DIM ± 0.010" X 3" MACHINE DIM ± 0.015" X 30" MACHINE DIM ± 0.005" X 200" BENDS DIM ± 1/2" FAB DIM ± 0.125" X 3" FAB DIM ± 0.062" X 3/4"	DATE: 20AUG15	NAME: JAR	 FRESNO VALVES AND CASTINGS, INC. P.O. BOX 40, SELMA, CA 93662 PHONE (559) 834-2511, FAX (559) 834-2017
DEBURR ALL SHARP EDGES & CORNERS ON CASTING MACH PARTS, SMT. METAL PARTS MATERIAL: SEE SHEET 2 TYPE: MANUFACTURED	DIVISION: FRESNO VALVES SERIES 8200 FABRICATED GATES FABRICATED SLIDE GATE #304SS 48" WIDE X 48" HIGH W/56TR NON-SELF CONTAINED RISING STEM 3-SIDED J-SEAL INSTALLATION DRAWING SCALE: NTS WEIGHT: 1120 lbs SHEET 2 OF 4 DRAWING NO. S01-149242-04772-02	APPROVED: 	

Last saved by 8/25/2015 9:20:34 AM by JohnAR

Created on 8/24/2010 2:27:40 PM



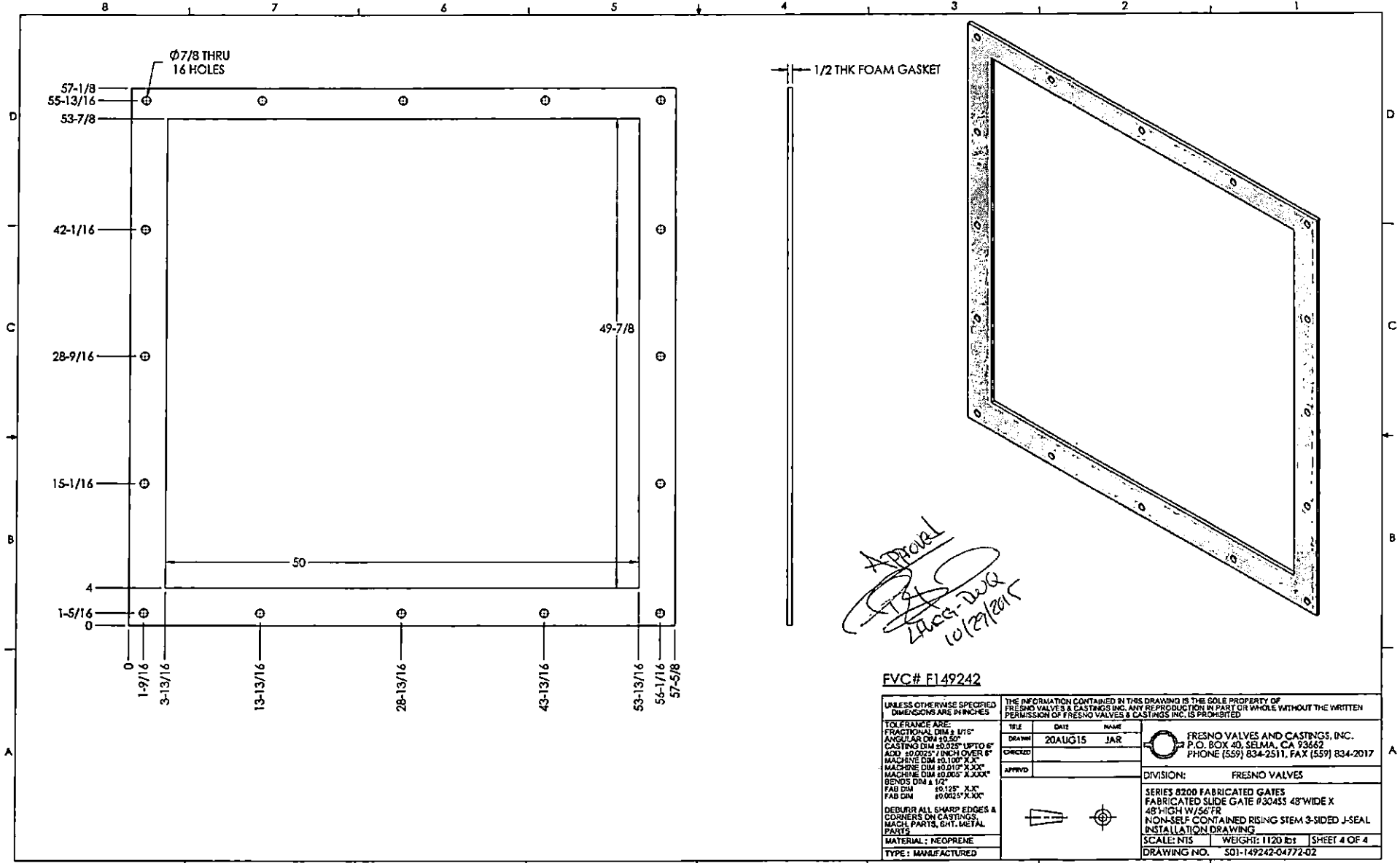
MATERIAL SPECIFICATIONS		
DESCRIPTION	MATERIAL	ASTM SPECIFICATION
FRAME, SLIDE PLATE AND REINFORCEMENTS	STAINLESS STEEL	STAINLESS STEEL (A276, Type 304)
SPRING CLIP (IF ANY)	STAINLESS STEEL	STAINLESS STEEL (A276, TYPE 304)
FASTENERS	STAINLESS STEEL	STAINLESS STEEL (A276, TYPE 304)
POLYLINER (IF ANY)	PLASTIC	POLYETHYLENE, ASTM D4020
SEALS (IF ANY)	RUBBER	NEOPRENE, ASTM D2000, GRADE IBE609
CLEANING SPECIFICATION		
SOLVENT CLEAN		
COATING SPECIFICATION		
ALL CAST IRON PARTS TO BE PAINTED: 4 MIL MINIMUM GRAY TMEC ENDURA-SHIELD II SERIES 1074-1074U.		
MAX LEAKAGE 0.1 GPM/FT SEATING AND 0.1 GPM/FT UNSEATING PERIMETER. (AWWA SPECIFICATION C513-05)		

*Handwritten signature and date:*  
 J. R. ...  
 10/29/2015

**FVC# F149242**  
 REFERENCE: FVC150806\_133546\_02\_1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE: FRACTIONAL DIM ± .015" ANGULAR DIM ± 0.50° CASTING DIM ± 0.025" UP TO 6" ADD .0025" FINISH OVER 6" MACHINE DIM ± 0.100" ± .005" MACHINE DIM ± 0.015" ± .001" MACHINE DIM ± 0.005" ± .0005" BENDS DIM ± 1/2° FAS DIM ± 0.125" ± .005" FAS DIM ± 0.0025" ± .001"		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FRESNO VALVES & CASTINGS INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF FRESNO VALVES & CASTINGS INC. IS PROHIBITED.	
TITLE: <b>SLIDE GATE</b> DATE: <b>20AUG15</b> DRAWN BY: <b>JAR</b> CHECKED BY: APPROVED BY:	NAME: P.O. BOX 40, SELMA, CA 93662 PHONE (559) 834-2511, FAX (559) 834-2017	DIVISION: <b>FRESNO VALVES</b> SERIES <b>8200 FABRICATED GATES</b> FABRICATED SLIDE GATE #304SS 48" WIDE X 48" HIGH W/26"TR NON-SELF CONTAINED RISING STEM 3-SIDED J-SEAL INSTALLATION DRAWING	
RETURN ALL SHARP EDGES & CORNERS ON CASTINGS MACH. PARTS, SHIT, METAL PARTS MATERIAL: SEE ABOVE TYPE: MANUFACTURED		SCALE: NTS DRAWING NO. S01-149242-04772-02	WEIGHT: 1120 lbs SHEET 3 OF 4

Last saved by 8/25/2016 9:20:34 AM by JohnAR

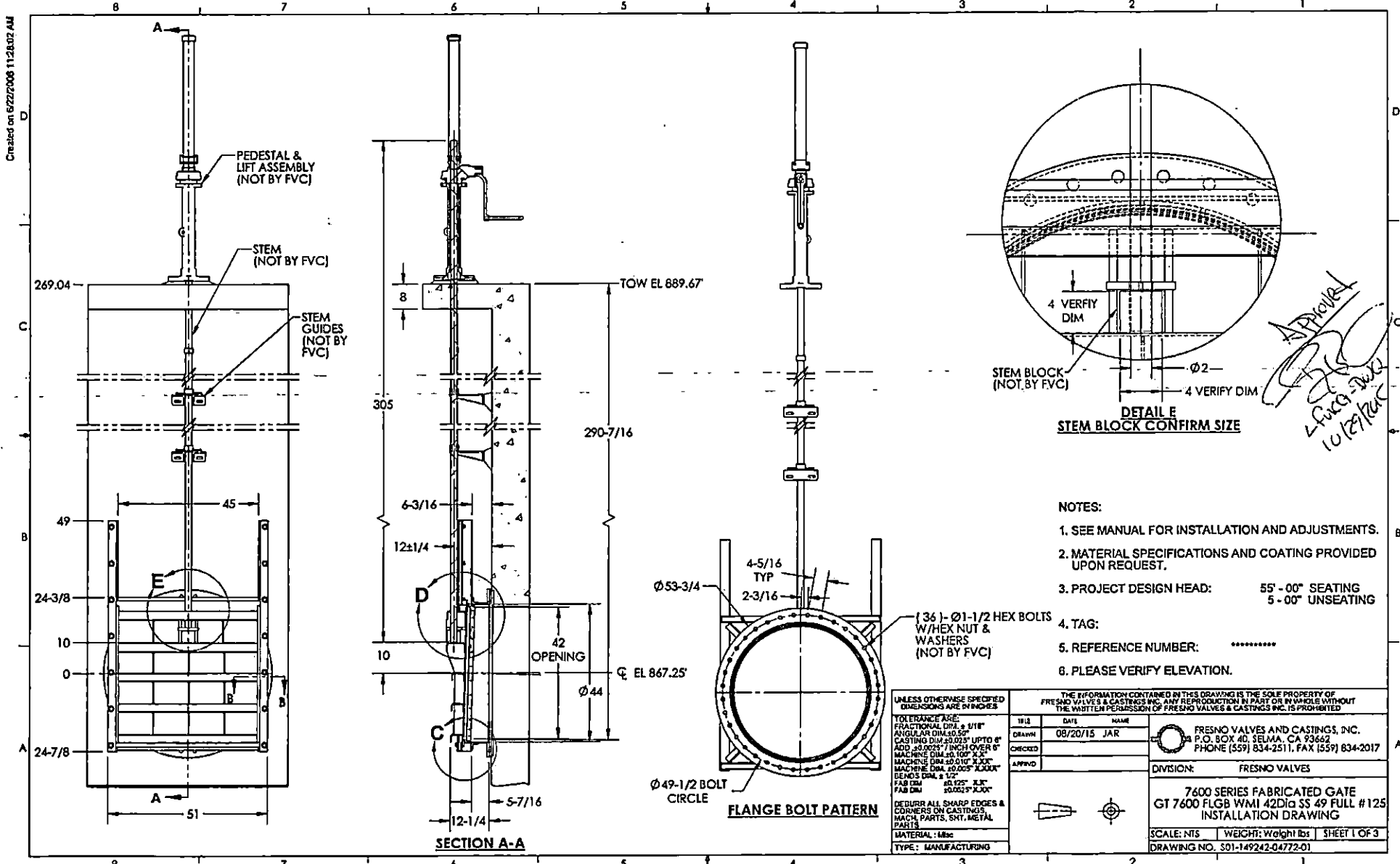


FVC# F149242

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE: FRACTIONAL DIM > 1/16" ANGULAR DIM ± 0.50° CASTING DIM ± 0.025" UP TO 6" ADD +0.0025" / INCH OVER 6" MACHINE DIM ± 0.010" X .1" MACHINE DIM ± 0.015" X .50" MACHINE DIM ± 0.005" X .XXX" BENDS DIM ± 1/2" FAB DIM ± 0.125" X .1" FAB DIM ± 0.025" X .1" DEBUR ALL SHARP EDGES & CORNERS ON CASTINGS & MACH PARTS, SHT. METAL PARTS MATERIAL: NEOPRENE TYPE: MANUFACTURED		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FRESNO VALVES & CASTINGS INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF FRESNO VALVES & CASTINGS INC. IS PROHIBITED. TITLE: _____ DATE: _____ NAME: _____ DRAWN: 20AUG15 JAR CHECKED: _____ APPROV: _____ FRESNO VALVES AND CASTINGS, INC. P.O. BOX 40, SELMA, CA 93662 PHONE (559) 834-2511, FAX (559) 834-2017	
DIVISION: FRESNO VALVES SERIES 8200 FABRICATED GATES FABRICATED SLIDE GATE # 304SS 48" WIDE X 48" HIGH W/56" FR NON-SELF-CONTAINED RISING STEM 3-SIDED J-SEAL INSTALLATION DRAWING SCALE: NTS WEIGHT: 1120 LBS SHEET 4 OF 4 DRAWING NO. S01-149242-04772-02			

Last saved by 8/25/2015 8:33:02 AM by JohnAR

Created on 8/22/2008 11:28:02 AM



*APPROVAL*  
*4 Aug 2015*  
*10/29/15*

**DETAIL E**  
**STEM BLOCK CONFIRM SIZE**

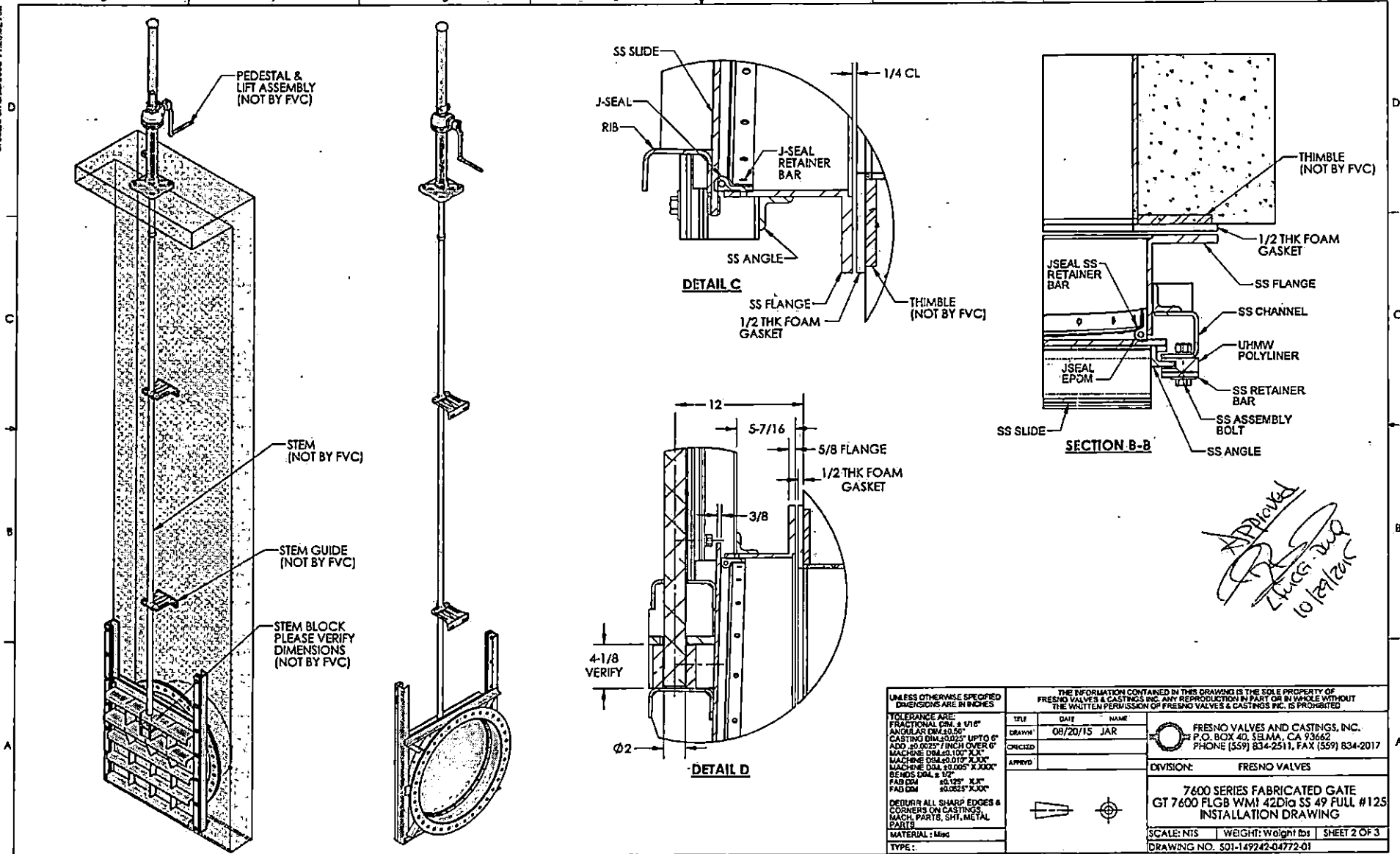
- NOTES:**
1. SEE MANUAL FOR INSTALLATION AND ADJUSTMENTS.
  2. MATERIAL SPECIFICATIONS AND COATING PROVIDED UPON REQUEST.
  3. PROJECT DESIGN HEAD: 55' - 00" SEATING  
5 - 00" UNSEATING
  4. TAG:
  5. REFERENCE NUMBER: \*\*\*\*\*
  6. PLEASE VERIFY ELEVATION.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FRESNO VALVES & CASTINGS INC. ANY REPRODUCTION IN PART OR IN WHOLE WITHOUT THE WRITTEN PERMISSION OF FRESNO VALVES & CASTINGS INC. IS PROHIBITED	
TOLERANCE ARE: FRACTIONAL DIM ± 1/16" ANGULAR DIM ± 0.50° CASTING DIM ± 0.025" UPTO 6" ADD ± 0.0025" FINCH OVER 6" MACHINE DIM ± 0.010" ± 0.005" MACHINE DIM ± 0.005" ± 0.001" BENDS DIM ± 1/2" FAB DIM ± 0.125" ± 0.062" FAB DIM ± 0.062" ± 0.031"	REV	DATE	NAME
	DRAWN	08/20/15	JAR
	CHECKED		
	APPROV		
DEBURR ALL SHARP EDGES & CORNERS ON CASTINGS, MACH PARTS, SMT. METAL PARTS		FRESNO VALVES AND CASTINGS, INC. P.O. BOX 40, SELMA, CA 93662 PHONE (559) 834-2511, FAX (559) 834-2017	
MATERIAL: Msc		DIVISION: FRESNO VALVES	
TYPE: MANUFACTURING		7600 SERIES FABRICATED GATE GT 7600 FLGB WMI 42Dia SS 49 FULL #125 INSTALLATION DRAWING	
		SCALE: NTS	WEIGHT: Weight lbs
		DRAWING NO. S01-149242-04772-01	



Last saved by 8/25/2015 8:33:02 AM by JohnAR

Created on 8/22/2008 11:28:32 AM

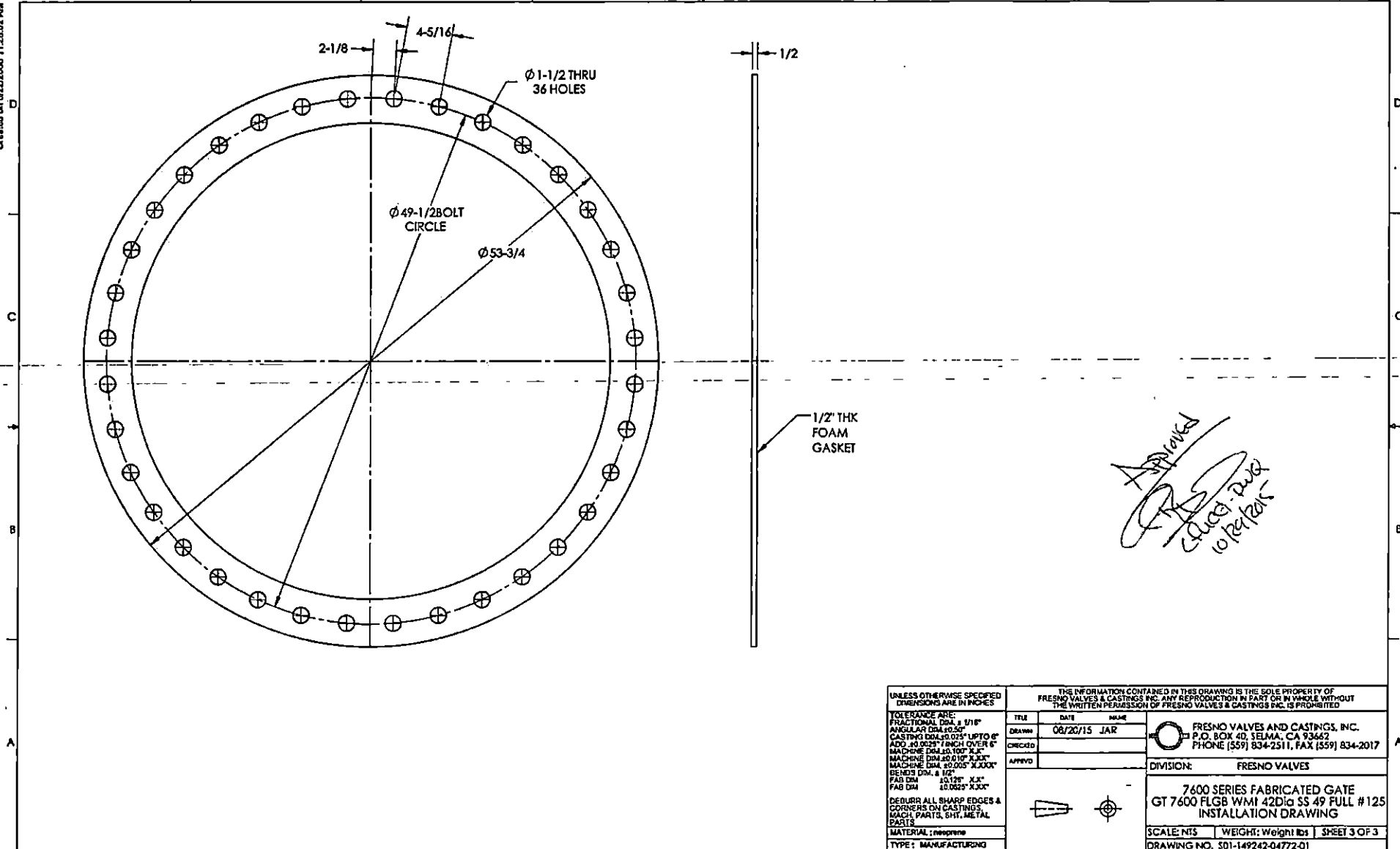


*APPROVED*  
*[Signature]*  
 To Review

TOLERANCE ARE: FRACTIONAL DIM. ± 1/16" ANGULAR DIM. ± 0.50° CASTING DIM. ± 0.025" UP TO 6" ADD ± 0.0025" 7 INCH OVER 6" MACHINE DIM. ± 0.010" 10" X 1" MACHINE DIM. ± 0.005" X .000" BENDS DIM. ± 1/2" FAB DIM. ± 0.125" X 1" FAB DIM. ± 0.0025" X 10"	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FRESNO VALVES & CASTINGS, INC. ANY REPRODUCTION IN PART OR IN WHOLE WITHOUT THE WRITTEN PERMISSION OF FRESNO VALVES & CASTINGS, INC. IS PROHIBITED.	
	TITLE: _____ DATE: _____ DRAWN: 08/20/15 JAR CHECKED: _____ APPROVED: _____	NAME: _____ FRESNO VALVES AND CASTINGS, INC. P.O. BOX 40, SELMA, CA 93662 PHONE (559) 834-2511, FAX (559) 834-2017
	DIVISION: FRESNO VALVES	
	7600 SERIES FABRICATED GATE GT 7600 FLGB WMI 42Dia SS 49 FULL #125 INSTALLATION DRAWING	
SCALE: NTS WEIGHT: Weight lbs SHEET 2 OF 3 DRAWING NO. S01-149242-04772-01		

Last saved by 8/25/2015 8:33:02 AM by JohnAR

Created on 8/22/2008 11:28:02 AM



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		THIS INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FRESNO VALVES & CASTINGS INC. ANY REPRODUCTION IN PART OR IN WHOLE WITHOUT THE WRITTEN PERMISSION OF FRESNO VALVES & CASTINGS INC. IS PROHIBITED	
TOLERANCE ARE: FRACTIONAL DIM. ± 1/16" ANGULAR DIM. ± 0.50° CASTING DIM. ± 0.025" UP TO 6" ADD .00025" FINCH OVER 6" MACHINE DIM. ± 0.010" X .5" MACHINE DIM. ± 0.005" X .XXX" BENDS DIM. ± 1/2" FAB DIM. ± 0.125" X .5" FAB DIM. ± 0.0625" X .5"	TITLE	DATE	NAME
REMOVE ALL SHARP EDGES & CORNERS ON CASTINGS. MACH. PARTS, SHI. METAL PARTS.	DRAWN	08/20/15	JAR
MATERIAL: neoprene	CHECKED		
TYPE: MANUFACTURING	APPROVED		
	FRESNO VALVES AND CASTINGS, INC. P.O. BOX 40, SELMA, CA 93662 PHONE (559) 834-2511, FAX (559) 834-2017		
	DIVISION: FRESNO VALVES		
	7600 SERIES FABRICATED GATE GT 7600 FLGB WMI 42D1Q SS 49 FULL #125 INSTALLATION DRAWING		
	SCALE: NTS	WEIGHT: Weight lbs	SHEET 3 OF 3
	DRAWING NO. 501-149242-04772-01		

THIS PAGE LEFT BLANK INTENTIONALLY

**APPENDIX B**

50029-008: 11/14/2018  
CONFORMED SET

Appendix B LFUCG – WH WWTP FINAL CLARIFIERS  
NO. 7 & NO. 8 STRUCTURAL REPAIRS

THIS PAGE LEFT BLANK INTENTIONALLY

MAYOR JIM GRAY



**LEXINGTON**

DOUG BURTON, P.E.  
DIRECTOR  
ENGINEERING

September 22, 2017

**Users of Lexington – Fayette Urban County Engineering Standard Drawings**

Re: Standard Drawings 2017

Attached is the latest edition of the LFUCG Standard Drawings for construction of storm, sanitary sewers, streets and roads in Lexington – Fayette County. These drawings supersede any and all Standard Drawings previously issued by the Division of Engineering.

These drawings become effective as of September 22, 2017 and any projects dedicated to public use after the above date must comply with or contain references to these Standard Drawings or revisions thereof where applicable.

Questions or comments should be directed to:

Urban County Engineer  
Division of Engineering  
Fourth Floor  
101 E. Vine Street  
Lexington, KY 40507  
859-258-3410

Sincerely,

A handwritten signature in black ink, appearing to read "W. Douglas Burton".

W. Douglas Burton, P.E.  
Urban County Engineer

WDB;MHF





# LEXINGTON

## LEXINGTON - FAYETTE URBAN COUNTY GOVERNMENT STANDARD DRAWINGS 2017 TABLE OF CONTENTS

Drawing No.	Drawing Title
<b>Manholes-Storm Drainage:</b>	
100	Storm Sewer Manhole Type "A" - Circular Walls
101	Storm Sewer Manhole Type "B" - Non-Circular Walls
102	Storm Sewer Manhole Details
103	Manhole Frames, Covers and Steps
104	Storm Sewer Manhole Circular Slabs 4'-0" and 5'-0" Diameter
105	Storm Sewer Manhole Circular Slabs 6'-0" Diameter
106	Storm Sewer Manhole Circular Slabs 7'-0" Diameter
107	Storm Sewer Manhole Circular Slabs 8'-0" Diameter
108	Reinforcement Detail 5' Non-Circular M.H. Less Than 10' Depth, 8" Walls, 10" Slab
109	Reinforcement Detail 5' Non-Circular M.H. 7'-6" to 20' Depth, 8" Walls, 12" Slab
110	Reinforcement Detail 6' Non-Circular M.H. Less Than 10' Depth, 8" Walls, 10" Slab
111	Reinforcement Detail 6' Non-Circular M.H. 8' to 15' Depth, 8" Walls, 12" Slab
112	Reinforcement Detail 6' Non-Circular M.H. 15' to 20' Depth, 10" Walls, 12" Slab
113	Reinforcement Detail 7' Non-Circular M.H. Less Than 10' Depth, 8" Walls, 10" Slab
114	Reinforcement Detail 7' Non-Circular M.H. 8' to 10' Depth, 8" Walls, 12" Slab
115	Reinforcement Detail 7' Non-Circular M.H. 10' to 20' Depth, 10" Walls, 12" Slab
116-119	(Future)
<b>Surface Inlets &amp; Catch Basins:</b>	
120	Surface Inlet Type "A"
121	Surface Inlet Type "B"
122-1	Curb Box Inlet Type "A" 4' x 4' Box 15" - 18" Pipes
122-2	Curb Box Inlet Type "A" 4' x 4' Box 15" - 18" Pipes
123-1	Curb Box Inlet Type "B" 5' x 5' Box 15" - 24" Pipes
123-2	Curb Box Inlet Type "B" 5' x 5' Box 15" - 24" Pipes
124-1	Curb Box Inlet Type "C" 4' x 3' Box Single Pipe 15" or Less
124-2	Curb Box Inlet Type "C" 4' x 3' Box Single Pipe 15" or Less
125	Curb Box Inlet Type "D"
126	Spring Box Inlet Type "A"
127	Spring Box Inlet Type "B"



# LEXINGTON

## LEXINGTON - FAYETTE URBAN COUNTY GOVERNMENT STANDARD DRAWINGS 2017 TABLE OF CONTENTS

Drawing No.	Drawing Title
128	Security Devices for Frames and Grates
129	(Future)
<b>Channels &amp; Ditches:</b>	
130-1	Aggregate Channel Lining
130-2	Aggregate Channel Lining
131	Mattress Channel Lining
132	Paved Ditch
133-139	(Future)
<b>Roadway Drainage:</b>	
140-149	(Future)
<b>Headwalls:</b>	
150	Straight Headwalls
151	ELL Headwalls
152	U-Type Headwalls
153	Pipe Culvert Headwalls 0° Skew 15" - 27" Circular Pipe
154-1	Pipe Culvert Headwalls 0° Skew 30" - 108" Pipe
154-2	Dimensions and Quantities 30" - 108" Headwalls Circular Pipe 0° Skew
154-3	Bill of Reinforcement 30" - 90" Diameter Circular Pipe Headwalls 0° Skew
154-4	Bill of Reinforcement 96" - 108" Diameter Circular Pipe Headwalls 0° Skew
158	18" - 24" Double & Triple Pipe Culvert Headwalls at 0° Skew
159-1	Double and Triple Pipe Culvert Headwalls 0° Skew
159-2	Dimensions and Quantities 30" - 48" Double and Triple Headwalls - Circular Pipe 0° Skew
159-3	Bill of Reinforcement 30" - 48" Double and Triple Headwalls - Circular Pipe 0° Skew
162	Sloped and Flared Box Inlet - Outlet 18" - 24" - 30" - 36" All Skews
163	Grates for Sloped and Flared Box Inlet - Outlet
164	Impact Stilling Basin 15" - 24" Pipes
165	Impact Stilling Basin 27" - 48" Pipes
166-169	(Future)
<b>Silt &amp; Erosion Control:</b>	
	See Chapter 11 of <i>LFUCG Stormwater Manual</i> for Approved Design Details





# LEXINGTON

## LEXINGTON - FAYETTE URBAN COUNTY GOVERNMENT STANDARD DRAWINGS 2017 TABLE OF CONTENTS

Drawing No.	Drawing Title
<b>Retaining Structures:</b>	
180	Retaining Wall Gravity Type
181-189	(Future)
<b>Trenching:</b>	
200	Trenching, Laying, Backfilling and Bedding Outside R/W Limits
201-1	Trenching, Laying, Backfilling and Bedding Under Street Pavement
201-2	Trenching, Laying, Backfilling and Bedding Under Street Pavement Using Flowable Fill
201-3	Utility Trench Restoration Beneath Existing Paved Roads (Section View)
201-4	Utility Trench Restoration Beneath Existing Paved Roads (Plan View)
204	Sanitary Sewer Pipe: Types and Maximum Allowable Fill Heights
206-209	(Future)
<b>Manholes-Sanitary:</b>	
210	Typical Precast Concrete Shallow Manhole Pipes 24" and Larger
211	Typical Standard Precast Concrete Manhole Pipes Up To 24"
212	Typical Precast Concrete Drop Manhole Pipes Up To 36"
213	Standard Manhole Junction and Water Stop Details
214	Sewer Manhole Adjustment Grade Rings
216	Manhole Size Standards and General Notes for Deep Manholes
217	Deflection Angle Criteria for Sanitary Manholes
220	Standard Circular Manhole Frame and Cover
222	Standard Watertight Manhole Frame and Cover
223-229	(Future)
<b>Connections:</b>	
230	House Lateral for Greater than 6' Deep Sewer in Soil and Rock Excavation
231	House Lateral for Greater than 6' Deep Sewer in Soil
232	House Lateral for Shallow Sewer in Soil or Rock
233	Lateral Cleanout in Non-Paved Areas and Yards
234	Right-Of-Way Easement Lateral Cleanout in Non-Paved Areas and Yards
240	Sanitary Sewer Stream Crossing and Stream Bed Restoration Detail
250	Grease Interceptor Typical Configuration



# LEXINGTON

## LEXINGTON - FAYETTE URBAN COUNTY GOVERNMENT STANDARD DRAWINGS 2017 TABLE OF CONTENTS

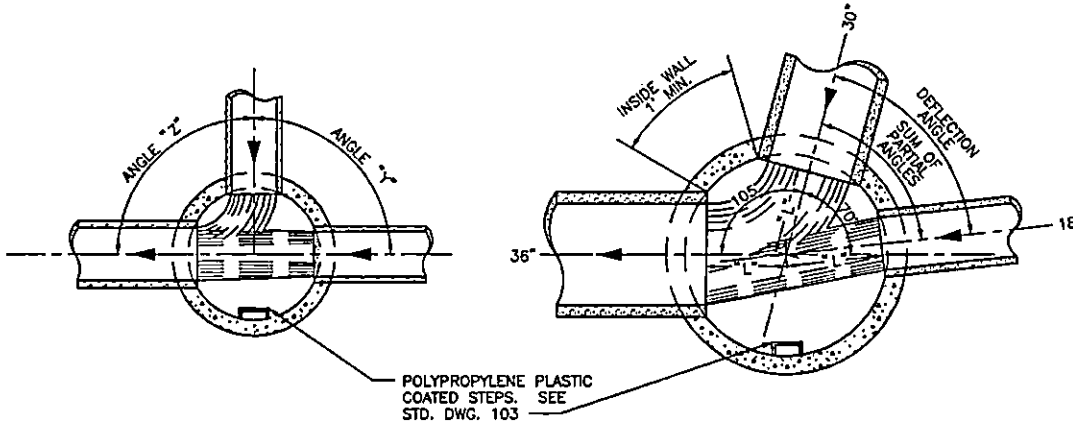
Drawing No.	Drawing Title
260	Sewer Connection to Existing Concrete Manhole
261-269	(Future)
<b>Streets &amp; Roads:</b>	
300	Typical Street Sections
301	Curb and Gutter
302	Integral Curb, Header Curb, Monolithic Curb and Sidewalk
303	Sidewalk Construction Specifications
304	Sidewalk Ramp Type 1
305	(Future)
306	(Future)
307-1	Residential Entrance Details
307-2	Commercial Entrance Details
308	Chain Link Fence 3' - 6'
309	Chain Link Fence 8' - 12'
310	Chain Link Gate
311	Plank Fence
312	Woven Wire Right-of-Way Fence Type 1
313	Woven Wire Right-of-Way Fence Type 2
314	Woven Wire Gates
315	Concrete Steps
316	Top Rail for Retaining Walls Handrail for Steps
317	County Road Typical Shoulder Sections (Minimum Requirements)
318	Edge Key
319	Typical Edge Key for Minimum Overlays, Short Projects, Low Speed
320-1	Perforated Pipe Subgrade Drainage Along Roadway
320-2	Perforated Pipe Subgrade Drainage For Raised Non-Paved Medians
321	Perforated Pipe for Subgrade Drainage
322	Perforated Pipe Underdrains
323	Public Improvement Sign
324-330	(Future)

TABLE I  
OF  
MINIMUM PARTIAL ANGLE

PIPE SIZE	MANHOLE SIZE									
	4'-0"		5'-0"		6'-0"		7'-0"		8'-0"	
	P. ANGLE	L. DIST.	P. ANGLE	L. DIST.	P. ANGLE	L. DIST.	P. ANGLE	L. DIST.	P. ANGLE	L. DIST.
15"	38°	1'-10"	30°	2'-4"	25°	2'-11"	22°	3'-5"	18°	3'-11"
18"	43°	1'-9"	34°	2'-4"	28°	2'-10"	24°	3'-4"	21°	3'-11"
24"	53°	1'-7"	41°	2'-2"	34°	2'-9"	29°	3'-3"	25°	3'-10"
27"	—	—	45°	2'-1"	37°	2'-8"	32°	3'-3"	28°	3'-9"
30"	—	—	49°	2'-0"	40°	2'-7"	34°	3'-2"	30°	3'-8"
33"	—	—	54°	1'-10"	44°	2'-6"	37°	3'-1"	37°	3'-8"
36"	—	—	—	—	47°	2'-4"	40°	3'-0"	34°	3'-7"
42"	—	—	—	—	55°	2'-1"	46°	2'-9"	39°	3'-5"
48"	—	—	—	—	63°	1'-9"	52°	2'-6"	44°	3'-2"
54"	—	—	—	—	—	—	59°	2'-3"	50°	2'-11"
60"	—	—	—	—	—	—	67°	1'-10"	56°	2'-8"

GENERAL NOTES:

1. ALL DIMENSIONS ARE BASED ON SIZE OF LARGEST PIPE IN MANHOLE.
2. MANHOLES FOR PIPE LARGER THAN 60" SHALL BE SPECIALLY DESIGNED.
3. IN CASES WHERE DEFLECTION ANGLES EXCEED MAXIMUM SHOWN IN TABLES, MANHOLE SHALL BE INCREASED IN SIZE OR SPECIALLY DESIGNED.
4. BOTTOM SLAB OF MANHOLES SHALL BE SPECIALLY DESIGNED WITH REGARD TO AREA, THICKNESS, AND REINFORCING IN SITUATIONS WHERE HIGH WATER TABLE OR UNSTABLE SOIL CONDITIONS EXIST.
5. MANHOLE BENCH SHALL SLOPE AT LEAST 1" PER FT. FROM WALLS TO CHANNELS AND SHALL HAVE SMOOTH FLOAT AND BRUSH FINISH.
6. ELEVATIONS OF PIPES IN MANHOLES SHALL BE SUCH THAT THE TOP OF ALL INFLUENT PIPES WILL BE AT AN ELEVATION EQUAL TO OR GREATER THAN THE TOP OF THE EFFLUENT PIPE.
7. INFLUENT PIPES MAY ENTER MANHOLES AT AN ELEVATION ABOVE THE CHANNELS AS REQUIRED TO AVOID CONFLICT WITH LARGER PIPES IN THE MANHOLE.



TYPE "A" MANHOLE - CIRCULAR WALLS  
CAST-IN-PLACE OR PRECAST CONCRETE

NOTES:

1. PRECAST CONCRETE MANHOLE BARREL SHALL BE ASTM C-478, CLASS II PIPE TO 12' DEPTH AND C-76 CLASS III GREATER THAN 12' DEPTH.
2. BASE SECTION OF CIRCULAR MANHOLES MAY BE CAST-IN-PLACE CONCRETE, OR CUSTOM PRECAST CONCRETE WITH OPENINGS FOR PIPE.
3. BASE SECTIONS MAY BE SIMILAR TO SANITARY SEWER MANHOLE.
4. PROVIDE STEPS WITHIN 18" OF BENCH.

CIRCULAR MANHOLE NOTES:

1. THE ANGLE BETWEEN ANY TWO PIPES (e.g. ANGLE "Y" OR "Z") MUST BE GREATER THAN THE SUM OF THE PARTIAL ANGLES FROM TABLE I FOR THE MANHOLE SIZE SELECTED. FOR SMALLER ANGLES BETWEEN PIPES, LARGE MANHOLES MUST BE SELECTED. (SEE EXAMPLE BELOW)
2. THE MAXIMUM DEFLECTION ANGLE BETWEEN ANY INCOMING PIPE AND THE DISCHARGE PIPE SHALL BE NO MORE THAN 90° FOR PIPES UP TO 24" IN DIAMETER. THE MAXIMUM DEFLECTION ANGLE FOR 27" TO 42" PIPES SHALL BE 75° AND FOR PIPES LARGER THAN 42" THE MAXIMUM DEFLECTION ANGLE SHALL BE 60°.

EXAMPLE FOR MANHOLE SIZE SELECTION:

FOR MANHOLE SHOWN ABOVE, THE ANGLE BETWEEN 18" AND 30" PIPE IS 70° AND THE ANGLE BETWEEN 30" AND 36" PIPE IS 110°. THE TABLE INDICATES THAT FOR A 6'-0" DIAMETER MANHOLE THE MINIMUM PARTIAL ANGLE FOR AN 18" PIPE IS 28° AND FOR A 30" PIPE IS 40°. THE SUM OF THE PARTIAL ANGLES IS 68° THIS SUM IS LESS THAN THE 70°. THEREFORE, A 6'-0" MANHOLE DIAMETER IS ACCEPTABLE.



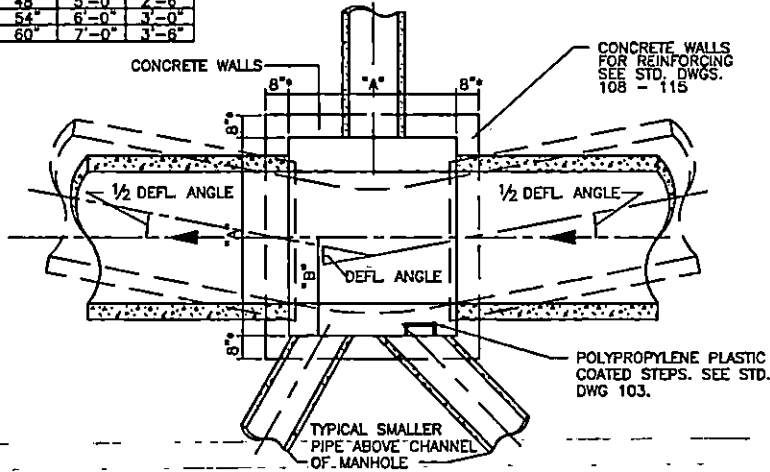
LEXINGTON

DIVISION OF ENGINEERING

STORM SEWER  
MANHOLE TYPE "A"-  
CIRCULAR WALLS

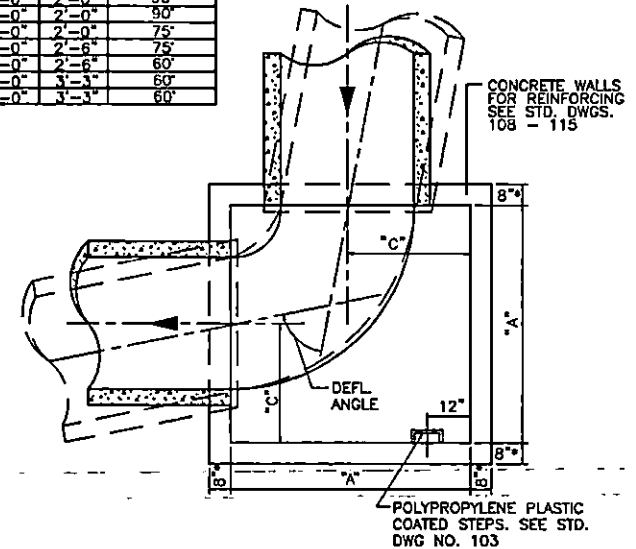
STANDARD DRAWING NO.	100
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

PIPE SIZE	DIM. "A"	DIM. "B"
12"	5'-0"	2'-6"
15"-33"	5'-0"	2'-6"
36"	5'-0"	2'-6"
42"	6'-0"	3'-0"
54"	6'-0"	3'-0"
60"	7'-0"	3'-6"



0°-22° DEFLECTION ANGLE

PIPE SIZE	DIM. "A"	DIM. "C"	MAXIMUM DEFL. ANGLE
12"	5'-0"	2'-0"	90°
15"-33"	5'-0"	2'-0"	90°
36"	5'-0"	2'-0"	75°
42"	6'-0"	2'-6"	75°
48"	6'-0"	2'-6"	60°
54"	7'-0"	3'-3"	60°
60"	7'-0"	3'-3"	60°

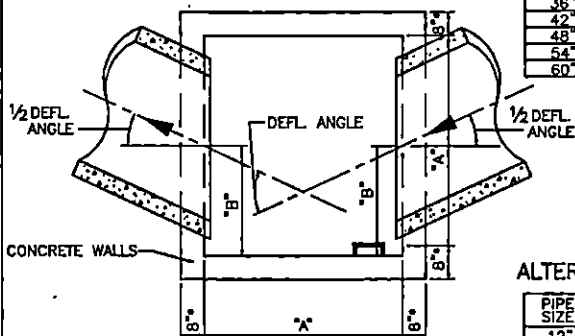


GREATER THAN 68° DEFLECTION ANGLE

**TYPE "B" MANHOLE - NON-CIRCULAR WALLS, CAST-IN-PLACE CONCRETE**

ALTERNATE-22°-50°

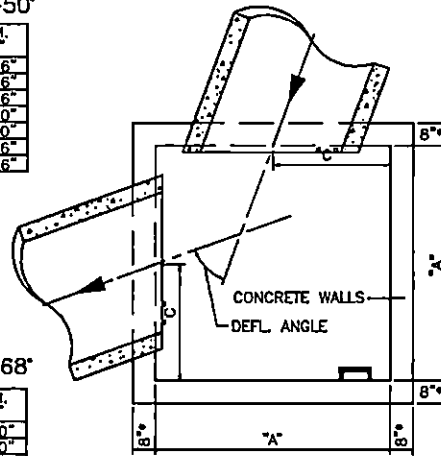
PIPE SIZE	DIM. "A"	DIM. "B"
12"	5'-0"	2'-6"
15"-33"	5'-0"	2'-6"
36"	5'-0"	2'-6"
42"	6'-0"	3'-0"
54"	6'-0"	3'-0"
60"	7'-0"	3'-6"



22°-50° DEFLECTION ANGLE

ALTERNATE-50°-68°

PIPE SIZE	DIM. "A"	DIM. "C"
12"	5'-0"	2'-0"
15"-33"	5'-0"	2'-0"
36"	5'-0"	2'-0"
42"	6'-0"	2'-6"
48"	6'-0"	2'-6"
54"	7'-0"	3'-3"
60"	7'-0"	3'-3"



50°-90° DEFLECTION ANGLE

**NOTES:**

- ALL DIMENSIONS ARE BASED ON SIZE OF LARGEST PIPE IN MANHOLE.
- MANHOLES FOR PIPE LARGER THAN 60" SHALL BE SPECIALLY DESIGNED.
- PIPES SHALL ENTER MANHOLE WALLS, NOT CORNERS. ALLOW 2" MINIMUM TO INSIDE CORNER FOR WALL CUT.
- IN CASES WHERE DEFLECTION ANGLES EXCEED MAXIMUM SHOWN IN TABLES, MANHOLE SHALL BE SPECIALLY DESIGNED.
- BOTTOM SLAB OF MANHOLES SHALL BE SPECIALLY DESIGNED WITH REGARD TO AREA, THICKNESS, AND REINFORCING IN SITUATIONS WHERE HIGH WATER TABLE OR UNSTABLE SOIL CONDITIONS EXIST.
- MANHOLE BENCH SHALL SLOPE AT LEAST 1" PER FT. FROM WALLS TO CHANNELS AND SHALL HAVE SMOOTH FLOAT AND BRUSH FINISH.
- THE TOP OF ALL INFLUENT PIPES WILL BE AT AN ELEVATION EQUAL TO THE TOP OF THE EFFLUENT PIPE.
- INFLUENT PIPES MAY ENTER MANHOLES AT AN ELEVATION ABOVE THE CHANNELS AS REQUIRED TO AVOID CONFLICT WITH LARGER PIPES IN THE MANHOLE.
- THE MAXIMUM DEFLECTION ANGLE BETWEEN ANY INCOMING PIPE AND OUT GOING PIPE SHALL BE NO MORE THAN 90° FOR PIPES UP TO 24" IN DIAMETER. THE MAXIMUM DEFLECTION ANGLE FOR 27" TO 42" PIPES SHALL BE 75° AND FOR PIPES LARGER THAN 42" THE MAX. DEFLECTION ANGLE SHALL BE 60°.
- FOR REINFORCING SEE STD. DWGS. 108 - 115.

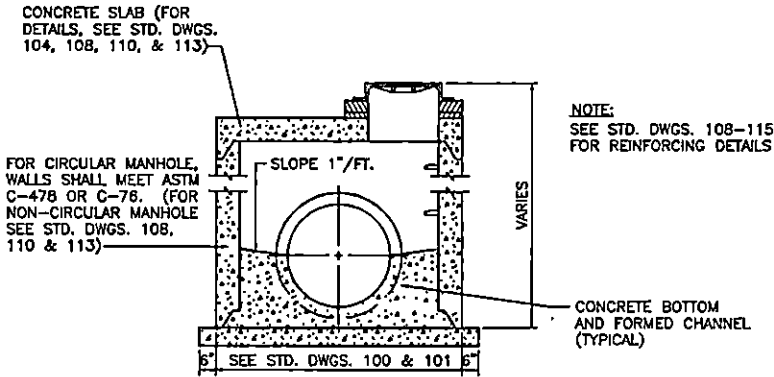


**LEXINGTON**

DIVISION OF ENGINEERING

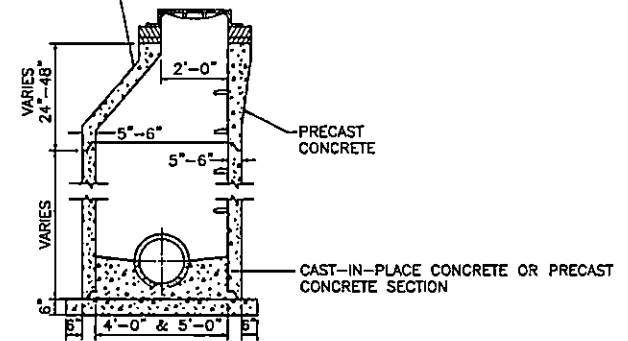
STORM SEWER  
MANHOLE TYPE "B"-  
NON-CIRCULAR WALLS

STANDARD DRAWING NO.	101
APPROVAL	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17
	DATE



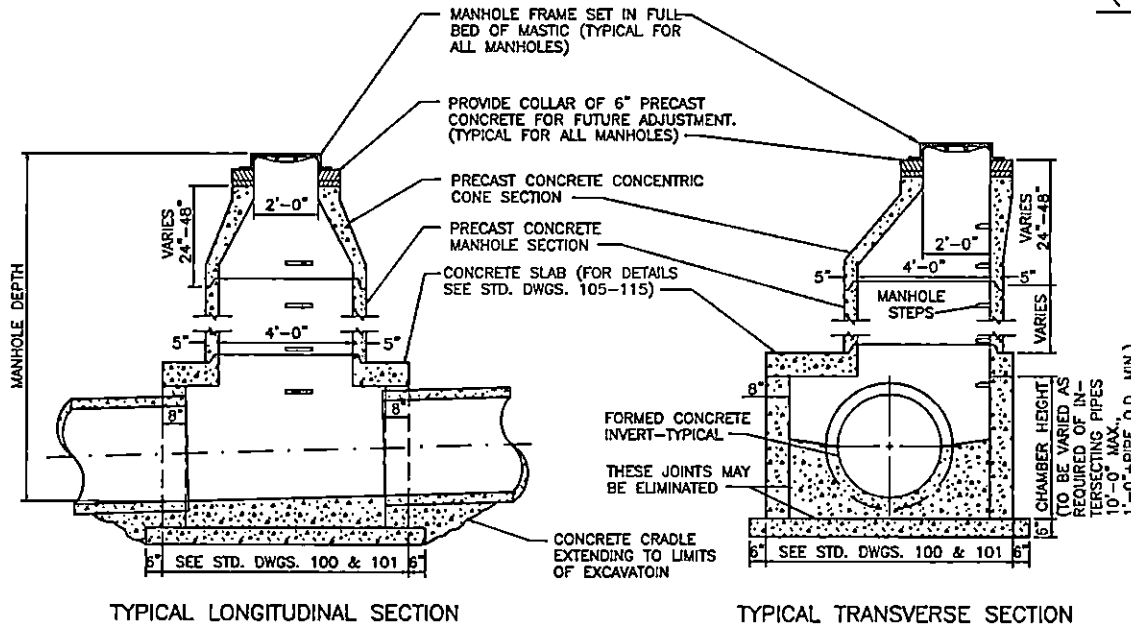
FOR CIRCULAR MANHOLE, WALLS SHALL MEET ASTM C-478 OR C-78. (FOR NON-CIRCULAR MANHOLE SEE STD. DWGS. 108, 110 & 113)

NOTE: VERTICAL WALLS AND FLAT SLAB MAY BE SUBSTITUTED FOR CONE SECTION OF MANHOLE.



CIRCULAR AND NON-CIRCULAR WALLS (TYPE "A" & TYPE "B")

STANDARD 4'-0" DIA. & 5'-0" CIRCULAR WALLS (TYPE "A")




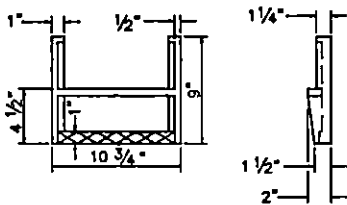
- NOTES:
1. BASE SECTION OF CIRCULAR MANHOLES MAY BE CAST-IN-PLACE CONCRETE OR CUSTOM PRECAST CONCRETE WITH OPENINGS FOR PIPE.
  2. 6" OVERHANG IN BOTTOM SLAB IS NOT REQUIRED IF PRECAST MANHOLES ARE USED.
  3. FLAT SLABS IN PAVED AREAS SHALL BE USED ONLY AS APPROVED BY ENGINEER.

STANDARD CIRCULAR MANHOLE - 6'-0" DIAMETER & LARGER TYPE "A" AND NON-CIRCULAR WALL MANHOLE - ALL SIZES TYPE "B"

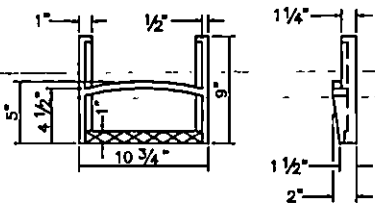
NO.	DATE	REVISION DESCRIPTION	BY
01	04/12/18	UPDATE MANHOLE FRAME NOTE	TAL

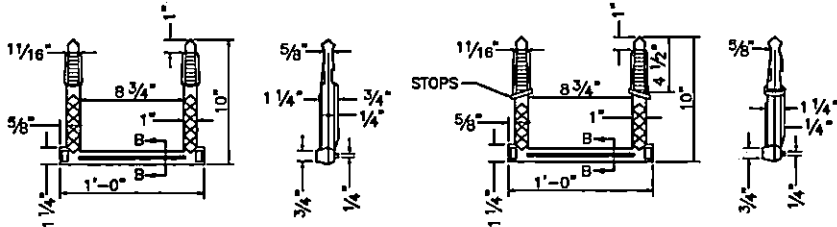
 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
STORM SEWER MANHOLE DETAILS	
STANDARD DRAWING NO.	102
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE/17
COLORADO SIGNER	DATE



STEP TYPE NO. 1



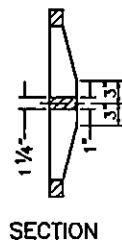
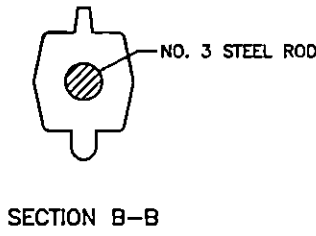
STEP TYPE NO. 2



STEP TYPE NO. 3

STEP TYPE NO. 4

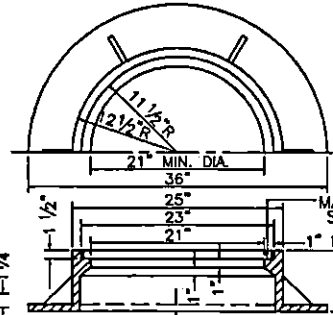
MANHOLE STEPS



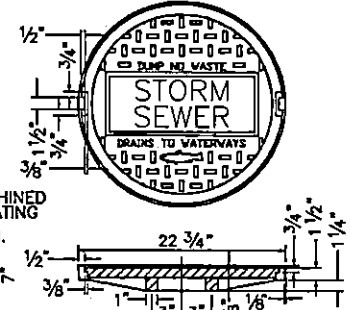
SECTION



GRATING COVER



FRAME



SOLID COVER

MANHOLE FRAME AND COVERS

**NOTES:**

1. MINIMUM WEIGHT FOR THE 7" FRAME SHALL BE 185 LBS.
2. MINIMUM WEIGHT FOR THE SOLID COVER SHALL BE 120 LBS.
3. CASTINGS TO MEET ASTM A-48 CLASS 35.

**NOTES:**

1. STEPS SHALL BE POLYPROPYLENE PLASTIC COATED STEEL ROD OR OF A TYPE AND SIZE APPROVED BY THE ENGINEER.
2. STEPS SHALL BE SPACED 12" TO 16" O.C. VERTICALLY SO AS TO FORM A CONTINUOUS LADDER.
3. STEPS SHALL BE REQUIRED IN MANHOLES WHEN THE STRUCTURE IS 4 FEET AND GREATER IN DEPTH. (MEASURE FROM FLOWLINE OF LOWEST PIPE TO TOP OF STRUCTURE.)
4. THE TREADS OF ALL STEPS SHALL HAVE ANTI-SKID PROPERTIES FOR HAND AND FOOT GRIPS.
5. MANHOLE STEPS SHALL BE INSTALLED IN A VERTICAL LINE AND SHALL COMPLY WITH OSHA STANDARDS IN ALL RESPECTS.
6. FOR CAST-IN-PLACE OR PRECAST CIRCULAR AND NON-CIRCULAR MANHOLES.
7. FIRST STEP SHALL BE 12" - 18" FROM TOP OF PRECAST CONE SECTION, AND SHALL BE VERTICALLY LOCATED TO MAXIMIZE THE DISTANCE OF ANY STEP FROM THE JOINT OF A MANHOLE SECTION.

NO.	DATE	REVISION DESCRIPTION	BY
01	04/13/16	UPDATE NOTE 2	TAL

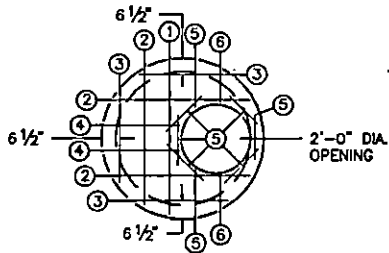


**LEXINGTON**

DIVISION OF ENGINEERING

MANHOLE FRAMES,  
COVERS, & STEPS

STANDARD DRAWING NO.	103
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

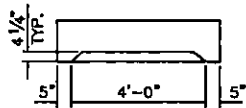


MARK	NO.	SIZE	LENGTH	TYPE
1	1	4	4'-5"	STR.
2	3	"	4'-0"	"
3	3	"	2'-8"	"
4	2	"	2'-0"	"
5	8	"	1'-6"	"
6	2	"	1'-0"	"

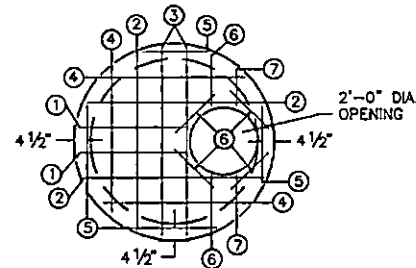
4'-0" DIA.  
SHALLOW MANHOLES

**NOTES:**

- FOR PIPE SIZES 15" TO 24".
- 9" O.C. SPACING EACH WAY.
- 8" THICK SLAB.
- 4'-10" O.D.
- 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
- CIRCULAR REBAR MAY BE USED, OR MARK 5 BARS AS SHOWN.



SIDE VIEW

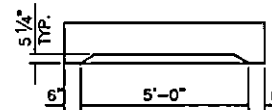


MARK	NO.	SIZE	LENGTH	TYPE
1	2	4	3'-2"	STR.
2	3	"	5'-3"	"
3	2	"	5'-8"	"
4	3	"	4'-2"	"
5	4	"	2'-2"	"
6	6	"	1'-6"	"
7	2	"	1'-0"	"

5'-0" DIA.  
SHALLOW MANHOLES

**NOTES:**


- FOR PIPE SIZES 21" TO 33".
- 9" O.C. SPACING EACH WAY.
- 8" THICK SLAB.
- 6'-0" O.D.
- 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
- CIRCULAR REBAR MAY BE USED, OR MARK 6 BARS AS SHOWN.

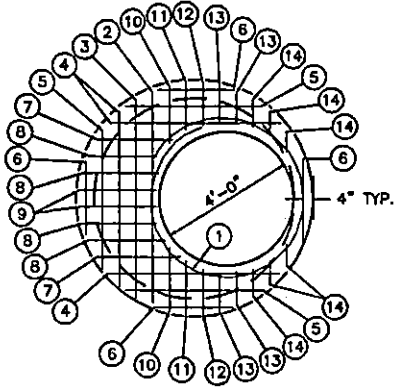


SIDE VIEW

**NOTE:**

SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.

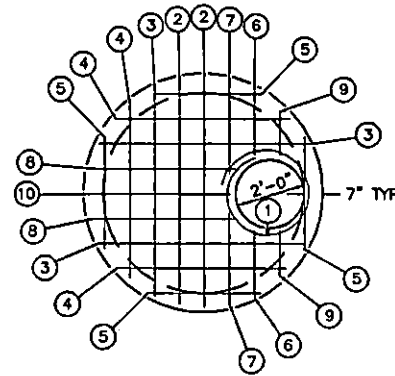
 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
STORM SEWER MANHOLE CIRCULAR SLABS 4'-0" & 5'-0" DIAMETER	
STANDARD DRAWING NO.	104
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	15'-10"	A
2	1	6	6'-6"	STR.
3	1	"	5'-11"	"
4	3	"	5'-3"	"
5	3	"	4'-3"	"
6	4	"	2'-6"	"
7	2	"	2'-7"	"
8	4	"	2'-3"	"
9	2	"	2'-2"	"
10	2	"	1'-10"	"
11	2	"	1'-6"	"
12	2	"	1'-3"	"
13	4	"	1'-0"	"
14	6	"	0'-10"	"

6'-0" DIA.

STANDARD MANHOLES



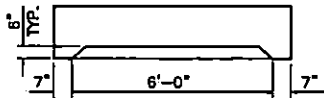
MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	9'-6"	A <sub>1</sub>
2	2	5	6'-9"	STR.
3	3	"	6'-3"	"
4	3	"	5'-3"	"
5	4	"	3'-3"	"
6	2	"	1'-10"	"
7	2	"	2'-9"	"
8	2	"	4'-4"	"
9	2	"	1'-5"	"
10	1	"	4'-3"	"

6'-0" DIA.

SHALLOW MANHOLES

NOTES:

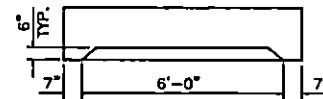
- FOR PIPE SIZES 15" TO 48".
- 6" O.C. SPACING EACH WAY.
- 12" THICK SLAB.
- 7'-2" O.D.
- 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.



SIDE VIEW

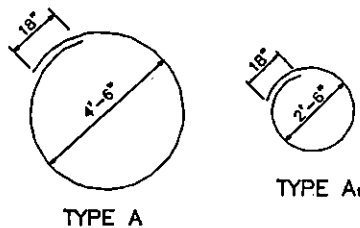
NOTES:

- FOR PIPE SIZES 15" TO 36".
- 9" O.C. SPACING EACH WAY.
- 8" THICK SLAB.
- 7'-2" O.D.
- 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.



SIDE VIEW

SPECIAL BAR BENDS



NOTE:

SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.

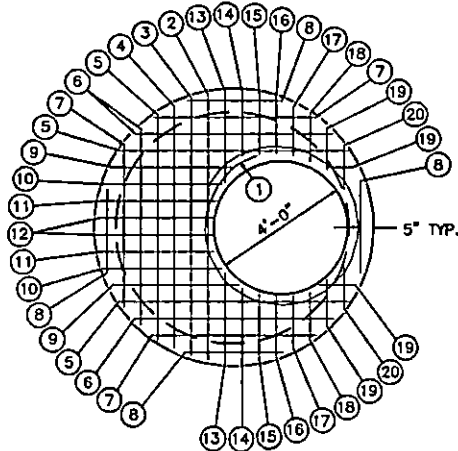
**LEXINGTON**

DIVISION OF ENGINEERING

STORM SEWER  
MANHOLE CIRCULAR SLABS  
6'-0" DIAMETER

STANDARD DRAWING NO.	105
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



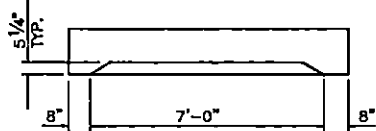


7'-0" DIA.  
STANDARD MANHOLES

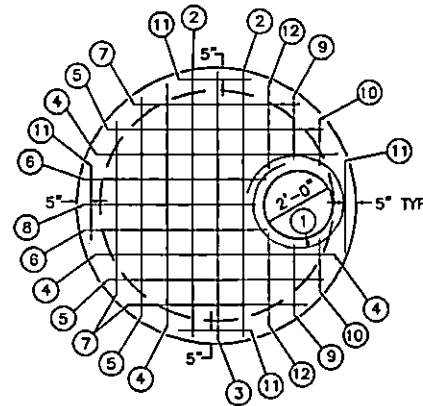
MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	15'-10"	A
2	1	6	7'-10"	STR.
3	1	"	7'-7"	"
4	1	"	7'-2"	"
5	3	"	6'-8"	"
6	3	"	5'-11"	"
7	3	"	4'-11"	"
8	4	"	3'-0"	"
9	2	"	3'-9"	"
10	2	"	3'-7"	"
11	2	"	3'-5"	"
12	2	"	3'-4"	"
13	2	"	2'-10"	"
14	2	"	2'-3"	"
15	2	"	1'-11"	"
16	2	"	1'-8"	"
17	2	"	1'-6"	"
18	2	"	1'-4"	"
19	4	"	1'-3"	"
20	2	"	1'-0"	"

NOTES:

- FOR PIPE SIZES 15" TO 60".
- 6" O.C. SPACING EACH WAY.
- 12" THICK SLAB.
- 8'-4" O.D.
- 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.



SIDE VIEW

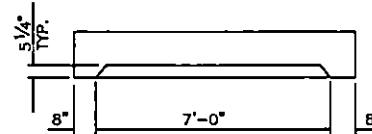


7'-0" DIA.  
SHALLOW MANHOLES

MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	9'-6"	A <sub>1</sub>
2	2	5	7'-10"	STR.
3	1	"	8'-0"	"
4	3	"	7'-6"	"
5	3	"	6'-8"	"
6	2	"	5'-7"	"
7	3	"	5'-3"	"
8	1	"	5'-4"	"
9	2	"	2'-2"	"
10	2	"	1'-8"	"
11	4	"	2'-6"	"
12	2	"	3'-0"	"

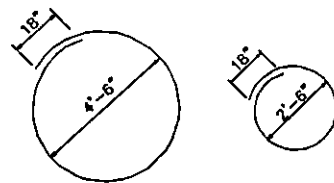
NOTES:

- FOR PIPE SIZES 15" TO 36".
- 9" O.C. SPACING EACH WAY.
- 10" THICK SLAB.
- 8'-4" O.D.
- 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.



SIDE VIEW

SPECIAL BAR BENDS



TYPE A

TYPE A<sub>1</sub>

NOTE:

SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.

**LEXINGTON**

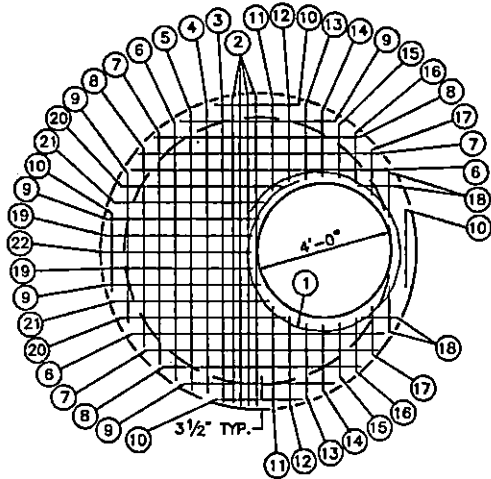
DIVISION OF ENGINEERING

STORM SEWER  
MANHOLE CIRCULAR SLABS  
7'-0" DIAMETER

---

STANDARD DRAWING NO. 106

APPROVAL: *[Signature]* 9/22/17  
URBAN COUNTY ENGINEER DATE  
*[Signature]* 9/22/17  
COMMISSIONER DATE

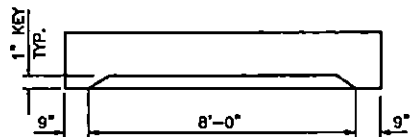


8'-0" DIA.  
STANDARD MANHOLE

MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	15'-10"	A
2	4	6	9'-0"	STR.
3	1	"	8'-10"	"
4	1	"	8'-8"	"
5	1	"	8'-3"	"
6	3	"	7'-9"	"
7	3	"	7'-0"	"
8	3	"	6'-0"	"
9	5	"	4'-6"	"
10	4	"	3'-0"	"
11	2	"	3'-0"	"
12	2	"	2'-9"	"
13	2	"	2'-4"	"
14	2	"	2'-0"	"
15	2	"	1'-9"	"
16	2	"	1'-7"	"
17	2	"	1'-6"	"
18	4	"	1'-0"	"
19	2	"	4'-5"	"
20	2	"	5'-0"	"
21	2	"	4'-8"	"
22	1	"	4'-4"	"

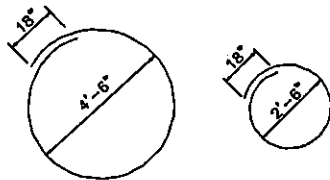
**NOTES:**

- FOR PIPE SIZES 15" TO 60".
- 6" O.C. SPACING EACH WAY.
- 12" THICK SLAB.
- 9'-6" O.D.
- 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.



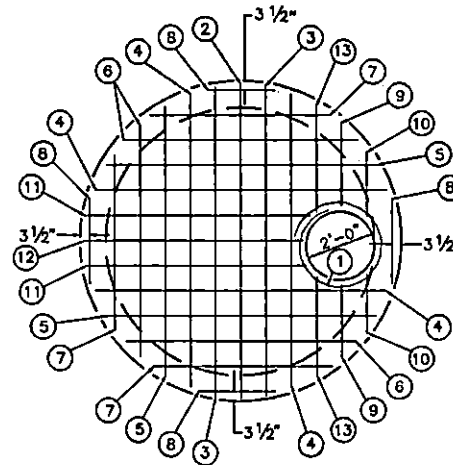
SIDE VIEW

**SPECIAL BAR BENDS**



TYPE A

TYPE A1

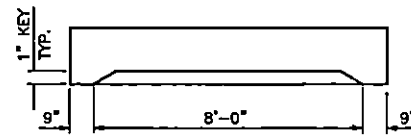


8'-0" DIA.  
SHALLOW MANHOLE

MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	9'-6"	A1
2	1	5	9'-3"	STR.
3	2	"	9'-0"	"
4	4	"	8'-9"	"
5	3	"	8'-0"	"
6	3	"	7'-0"	"
7	3	"	5'-5"	"
8	4	"	2'-9"	"
9	2	"	2'-3"	"
10	2	"	1'-9"	"
11	2	"	6'-6"	"
12	1	"	6'-2"	"
13	2	"	3'-3"	"

**NOTES:**


- FOR PIPE SIZES 15" TO 60".
- 9" O.C. SPACING EACH WAY.
- 10" THICK SLAB.
- 9'-6" O.D.
- 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.



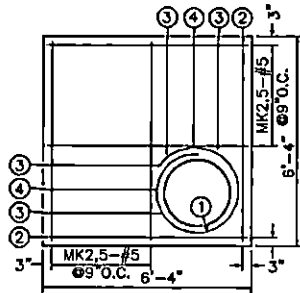
SIDE VIEW

**NOTE:**

SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.

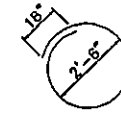
	<b>LEXINGTON</b>
DIVISION OF ENGINEERING	
STORM SEWER MANHOLE CIRCULAR SLABS 8'-0" DIAMETER	
STANDARD DRAWING NO.	107
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

## SPECIAL BAR BENDS

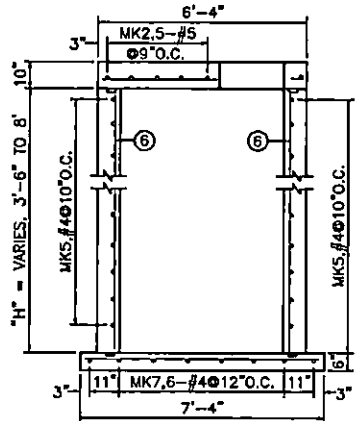


TOP SLAB  
2'-0" OPENING

MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	9'-6"	A <sub>1</sub>
2	12	5	6'-0"	STR.
3	4	5	3'-8"	"
4	2	5	3'-4"	"



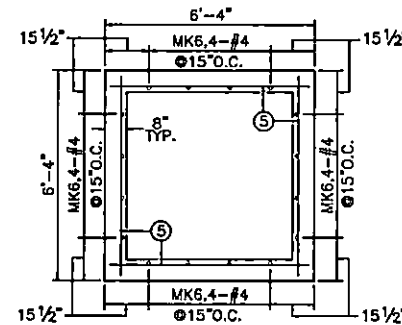
TYPE A<sub>1</sub>



VERT. SECTION

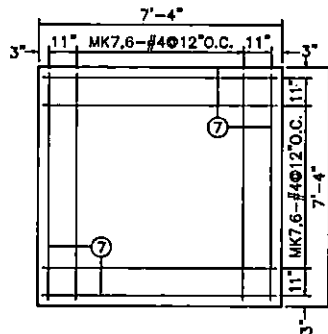
MARK	NO.	SIZE	LENGTH	TYPE
5	*	4	6'-0"	STR.

\* 4 X (HEIGHT OF WALL (INCH)/10)  
(ROUNDED UP TO THE NEXT  
WHOLE NUMBER)



HORIZ. SECTION

MARK	NO.	SIZE	LENGTH	TYPE
6	16	4	DIM. "H"-2"	STR.



BOTTOM SLAB

MARK	NO.	SIZE	LENGTH	TYPE
7	16	4	7'-0"	STR.

### NOTES:

1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.

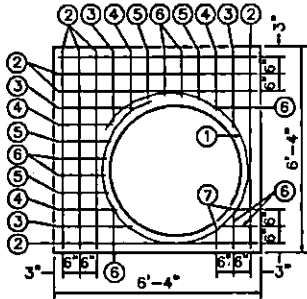


**LEXINGTON**

DIVISION OF ENGINEERING

REINFORCEMENT DETAIL  
5' NON-CIRCULAR M.H.  
LESS THAN 10' DEPTH,  
8" WALLS, 10" SLAB

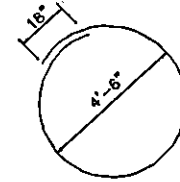
STANDARD DRAWING NO.	108
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



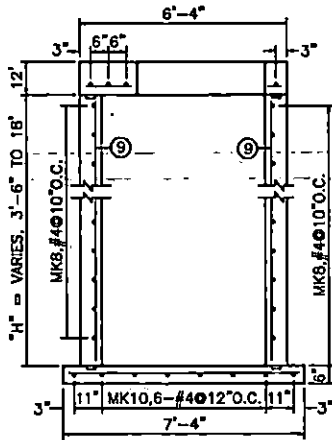
**TOP SLAB**  
4'-0" OPENING

MARK NO.	NO.	SIZE	LENGTH	TYPE
1	1	6	15'-10"	A
2	8	5	6'-0"	STR.
3	4	5	2'-4"	"
4	4	5	1'-9"	"
5	4	5	1'-5"	"
6	8	5	1'-4"	"
7	2	5	0'-10"	"

**SPECIAL BAR BENDS**



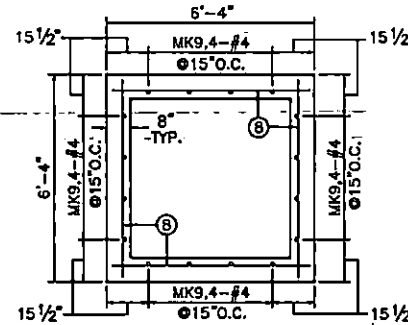
TYPE A



**VERT. SECTION**

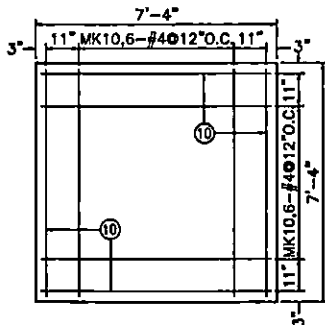
MARK NO.	NO.	SIZE	LENGTH	TYPE
8	*	4	6'-0"	STR.

\* 4 X (HEIGHT OF WALL (INCH)/10)  
(ROUNDED UP TO THE NEXT WHOLE NUMBER)



**HORIZ. SECTION**

MARK NO.	NO.	SIZE	LENGTH	TYPE
9	16	4	DIM. "H"-2"	STR.



**BOTTOM SLAB**

MARK NO.	NO.	SIZE	LENGTH	TYPE
10	16	4	7'-0"	STR.

**NOTES:**

1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN THE TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.

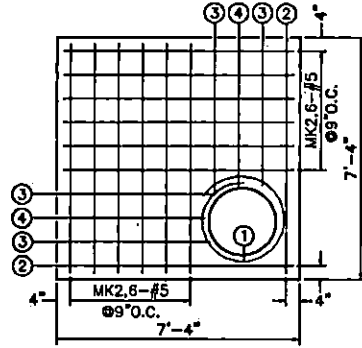


**LEXINGTON**

DIVISION OF ENGINEERING

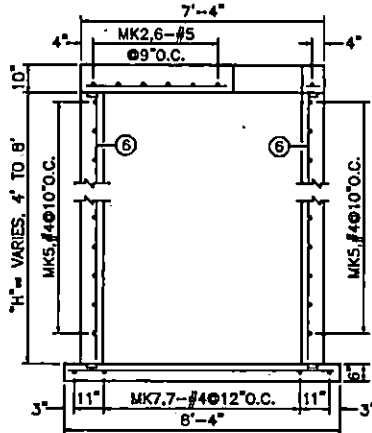
REINFORCEMENT DETAIL  
5' NON-CIRCULAR M.H.  
7'-6" TO 20' DEPTH,  
8" WALLS, 12" SLAB

STANDARD DRAWING NO.	109
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

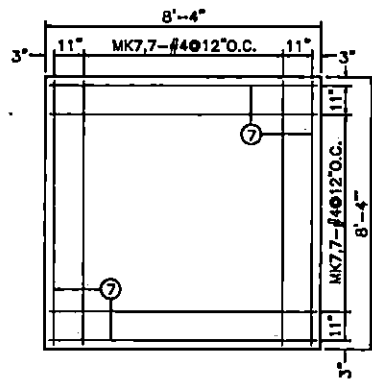


**TOP SLAB**  
2'-0" OPENING

MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	9'-6"	A <sub>1</sub>
2	14	5	7'-0"	STR.
3	4	5	4'-8"	"
4	2	5	4'-4"	"



**VERT. SECTION**



**BOTTOM SLAB**

MARK	NO.	SIZE	LENGTH	TYPE
5	*	4	7'-0"	STR.

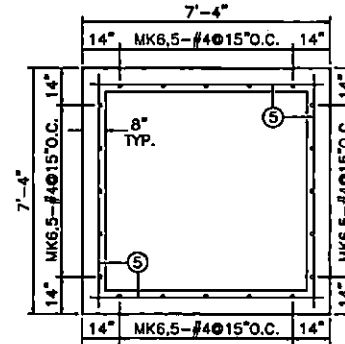
\* 4 X (HEIGHT OF WALL (INCH)/10)  
(ROUNDED UP THE NEXT WHOLE NUMBER)

MARK	NO.	SIZE	LENGTH	TYPE
7	18	4	8'-0"	STR.

**SPECIAL BAR BENDS**



TYPE A<sub>1</sub>



**HORIZ. SECTION**

MARK	NO.	SIZE	LENGTH	TYPE
6	20	4	DIM. "H"-2"	STR.

**NOTES:**

1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.

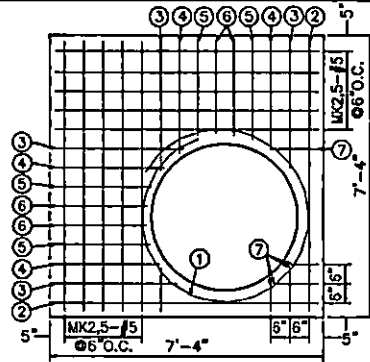


**LEXINGTON**

DIVISION OF ENGINEERING

REINFORCEMENT DETAIL  
6' NON-CIRCULAR M.H.  
LESS THAN 10' DEPTH,  
8" WALLS, 10" SLAB

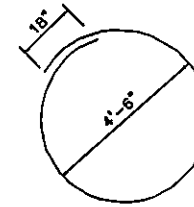
STANDARD DRAWING NO.	110
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



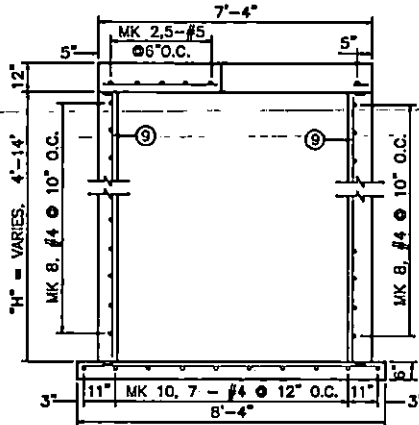
**TOP SLAB**  
4'-0" OPENING

MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	15'-10"	A
2	12	5	7'-10"	STR.
3	4	5	3'-4"	"
4	4	5	2'-9"	"
5	4	5	2'-5"	"
6	4	5	2'-4"	"
7	6	5	0'-10"	"

**SPECIAL BAR BENDS**



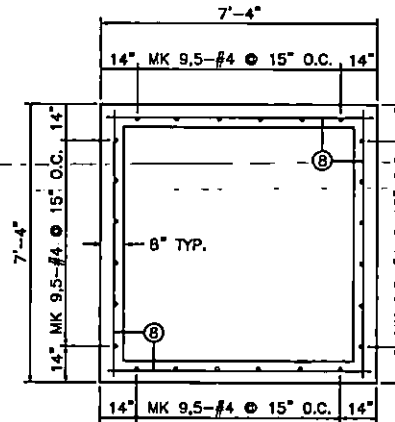
TYPE A



**VERT. SECTION**

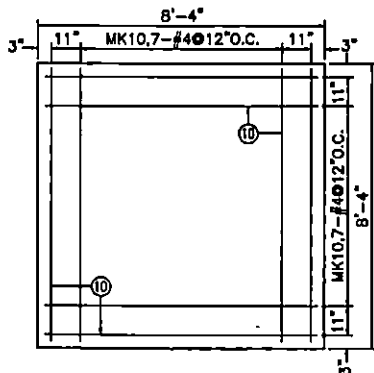
MARK	NO.	SIZE	LENGTH	TYPE
8	4	7'-0"	STR.	

\* 4 X (HEIGHT OF WALL (INCH)/10)  
(ROUNDED UP TO THE NEXT WHOLE NUMBER)



**HORIZ. SECTION**

MARK	NO.	SIZE	LENGTH	TYPE
9	20	4	DIM. "H"-2"	STR.



**BOTTOM SLAB**

MARK	NO.	SIZE	LENGTH	TYPE
10	18	4	8'-0"	STR.

**NOTES:**

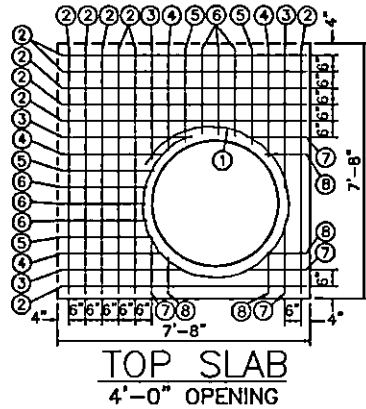
1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.



DIVISION OF ENGINEERING

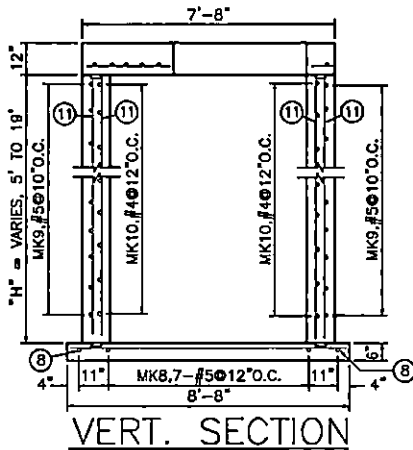
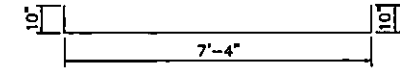
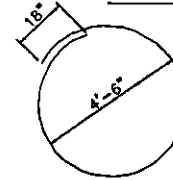
REINFORCEMENT DETAIL  
6' NON-CIRCULAR M.H.  
8' TO 15' DEPTH,  
8" WALLS, 12" SLAB

STANDARD DRAWING NO.	111
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17
	DATE



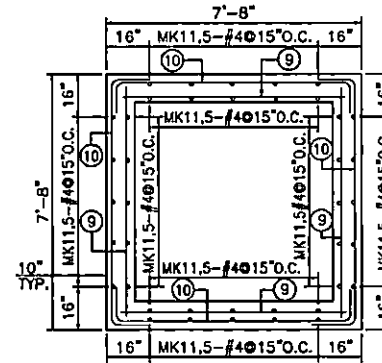
MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	15'-10"	A
2	12	5	7'-4"	STR.
3	4	5	3'-3"	"
4	4	5	2'-9"	"
5	4	5	2'-7"	"
6	6	5	2'-6"	"
7	4	5	1'-2"	"
8	4	5	0'-10"	"

**SPECIAL BAR BENDS**

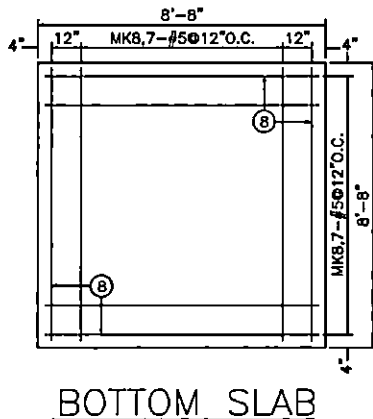


MARK	NO.	SIZE	LENGTH	TYPE
9	*1	5	7'-4"	STR.
10	*2	4	9'-0"	C

\*1 4 X (WALL HEIGHT (INCH)/10)  
\*2 4 X (WALL HEIGHT (INCH)/12)  
(ROUNDED UP TO THE NEXT WHOLE NUMBER)



MARK	NO.	SIZE	LENGTH	TYPE
11	40	4	DIM. "H"-2"	STR.



MARK	NO.	SIZE	LENGTH	TYPE
8	18	5	8'-4"	STR.

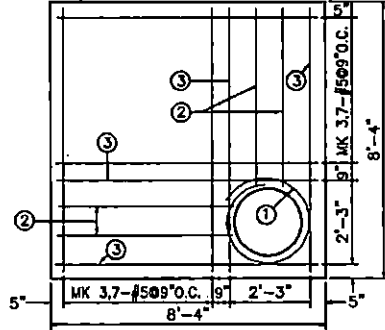
**NOTES:**

1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.

**LEXINGTON**  
DIVISION OF ENGINEERING

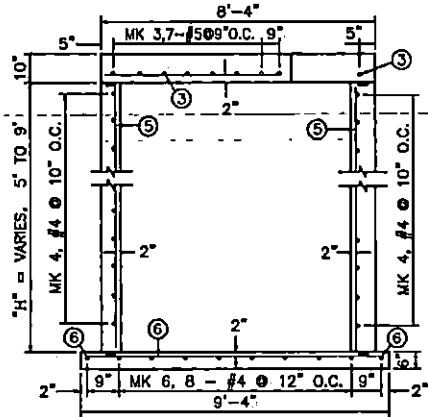
REINFORCEMENT DETAIL  
6' NON-CIRCULAR M.H.  
15' TO 20' DEPTH,  
10" WALLS, 12" SLAB

STANDARD DRAWING NO. 112  
APPROVAL: *[Signature]* 9/22/17  
URBAN COUNTY ENGINEER DATE  
COMMISSIONER *[Signature]* 9/22/17 DATE



**TOP SLAB**  
2'-0" OPENING

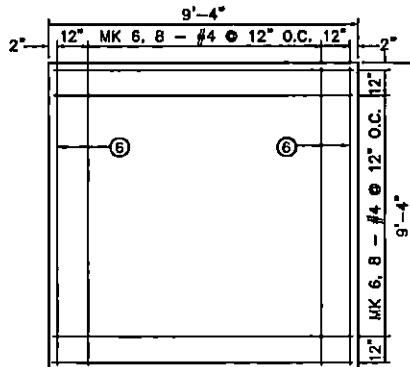
MARK	NO.	SIZE	LENGTH	TYPE
1	1	6	9'-6"	A <sub>1</sub>
2	4	5	5'-5"	STR.
3	18	5	8'-0"	"



**VERT. SECTION**

MARK	NO.	SIZE	LENGTH	TYPE
4	*	4	8'-0"	STR.

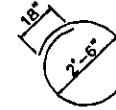
\* 4 X (HEIGHT OF WALL)  
(INCH)/10 (ROUNDED  
TO THE NEXT WHOLE NUMBER.)



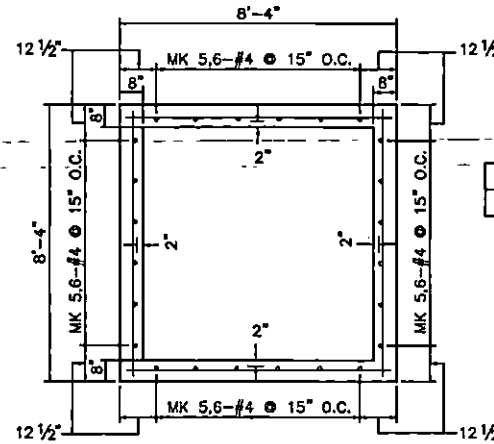
**BOTTOM SLAB**

MARK	NO.	SIZE	LENGTH	TYPE
6	20	4	9'-0"	STR.

**SPECIAL BAR BENDS**



TYPE A<sub>1</sub>



**HORIZ. SECTION**

MARK	NO.	SIZE	LENGTH	TYPE
5	24	4	DIM. "H"-2"	STR.

**NOTES:**

1. PROVIDE 2" X 4" KEYS FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.



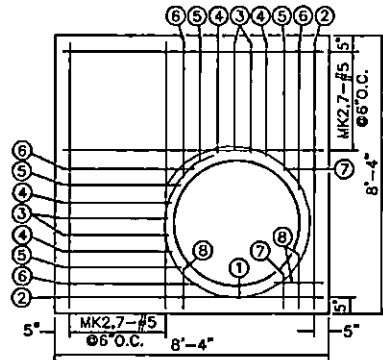
**LEXINGTON**

DIVISION OF ENGINEERING

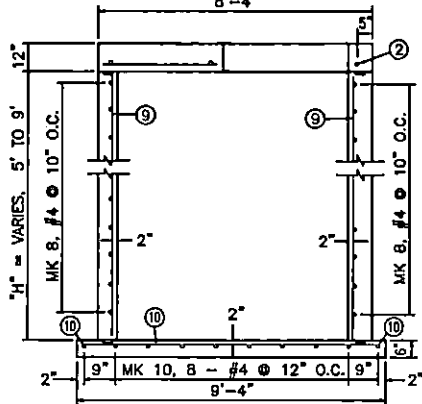
REINFORCEMENT DETAIL  
7' NON-CIRCULAR M.H.  
LESS THAN 10' DEPTH,  
8" WALLS, 10" SLAB

STANDARD DRAWING NO.	113
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17
	DATE

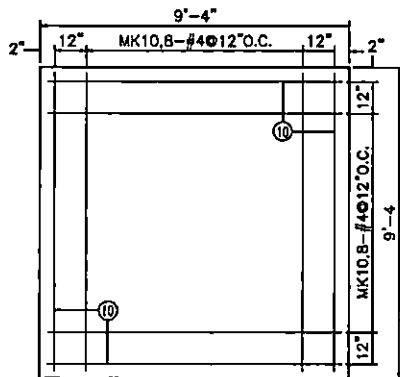




**TOP SLAB**  
4'-0" OPENING



**VERT. SECTION**



**BOTTOM SLAB**

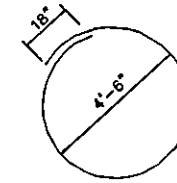
MARK NO.	SIZE	LENGTH	TYPE	
1	1	6	15'-10"	A
2	16	5	8'-0"	STR.
3	4	5	3'-4"	"
4	4	5	3'-5"	"
5	4	5	3'-9"	"
6	4	5	4'-4"	"
7	2	5	0'-10"	"
8	3	5	1'-4"	"

MARK NO.	SIZE	LENGTH	TYPE	
8	*	4	8'-0"	STR.

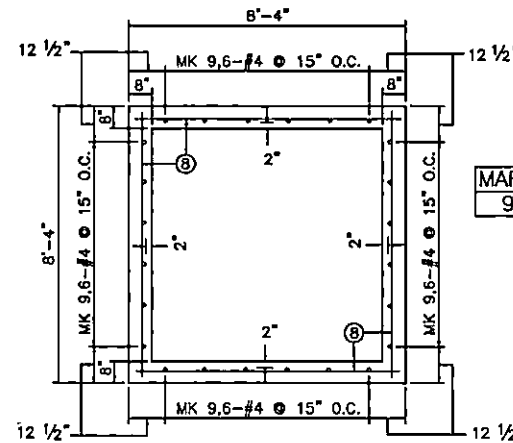
\* 4 X (HEIGHT OF WALL (INCH)/10)  
(ROUNDED UP TO THE NEXT WHOLE NUMBER)

MARK NO.	SIZE	LENGTH	TYPE	
10	20	4	9'-0"	STR.

**SPECIAL BAR BENDS**



**TYPE A**



**HORIZ. SECTION**

MARK NO.	SIZE	LENGTH	TYPE	
9	24	4	DIM. "H"-2"	STR.

**NOTES:**

1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.



**LEXINGTON**

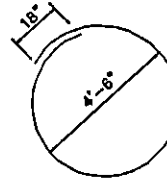
DIVISION OF ENGINEERING

REINFORCEMENT DETAIL  
7' NON-CIRCULAR M.H.  
8' TO 10' DEPTH,  
8" WALLS, 12" SLAB

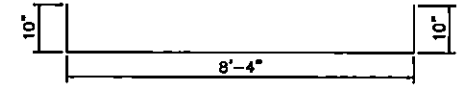
STANDARD DRAWING NO. 114

APPROVAL: *[Signature]* 9/22/17  
URBAN COUNTY ENGINEER DATE  
*[Signature]* 9/22/17  
COMMISSIONER DATE

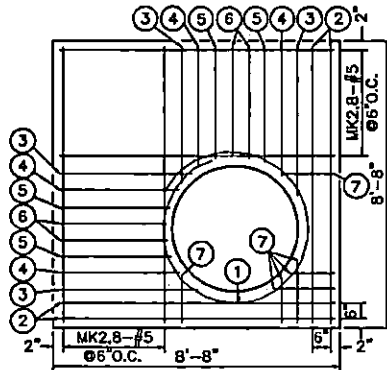
### SPECIAL BAR BENDS



TYPE A

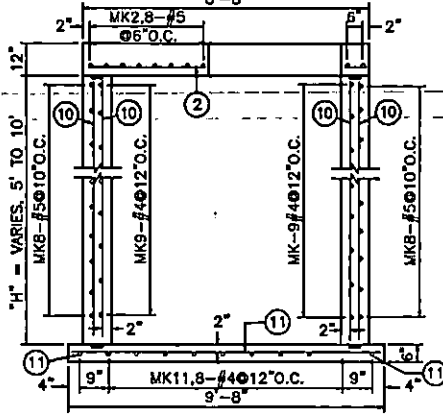


TYPE C



TOP SLAB  
4'-0" OPENING

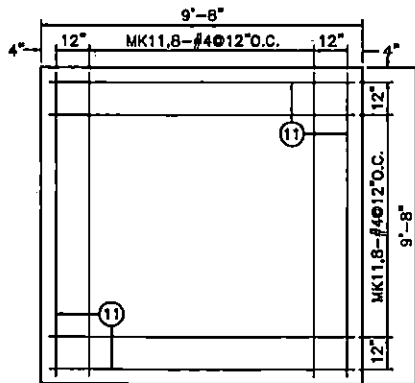
MARK NO.	SIZE	LENGTH	TYPE
1	6	15'-10"	A
2	5	8'-4"	STR.
3	5	4'-3"	"
4	5	3'-9"	"
5	5	3'-7"	"
6	5	3'-6"	"
7	5	1'-2"	"



VERT. SECTION

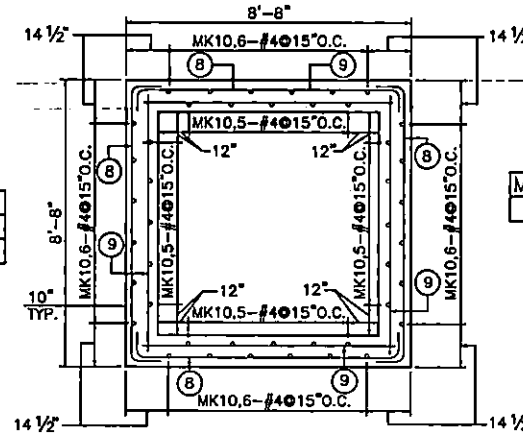
MARK NO.	SIZE	LENGTH	TYPE
8	*1	10'-0"	C
9	*2	8'-4"	STR.

\*1 4 X (WALL HEIGHT (INCH)/10)  
\*2 4 X (WALL HEIGHT (INCH)/12)  
(ROUNDED UP TO THE NEXT WHOLE NUMBER)



BOTTOM SLAB

MARK NO.	SIZE	LENGTH	TYPE
11	20	9'-4"	STR.



HORIZ. SECTION

MARK NO.	SIZE	LENGTH	TYPE
10	44	4 DIM. "H"-2"	STR.

**NOTES:**

1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN \*TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.

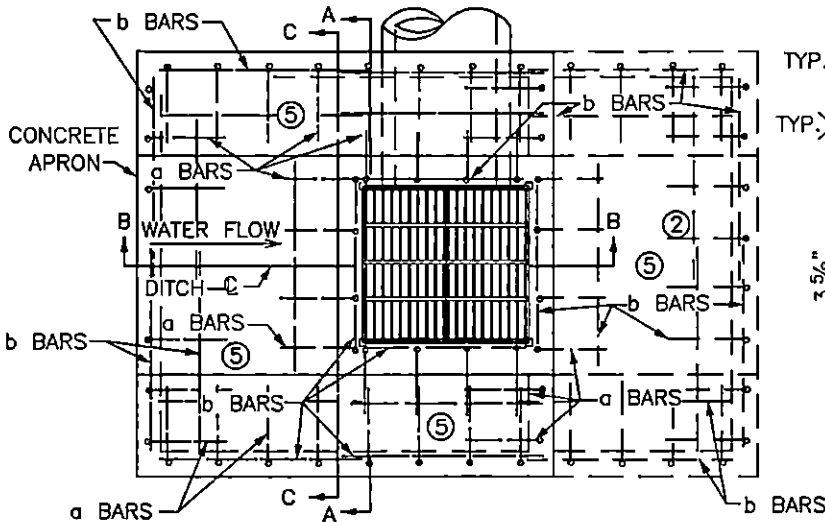


**LEXINGTON**

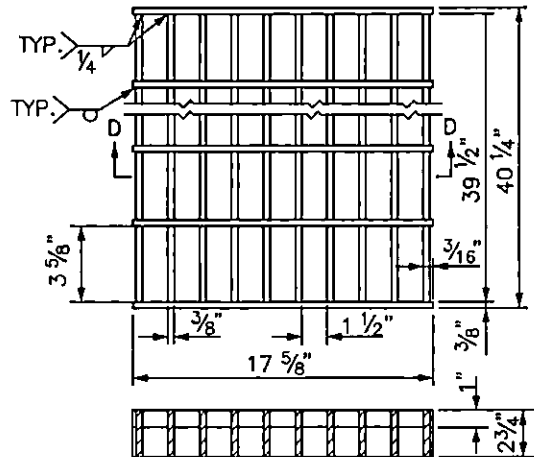
DIVISION OF ENGINEERING

REINFORCEMENT DETAIL  
7' NON-CIRCULAR M.H.  
10' TO 20' DEPTH,  
10" WALLS, 12" SLAB

STANDARD DRAWING NO.	115
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

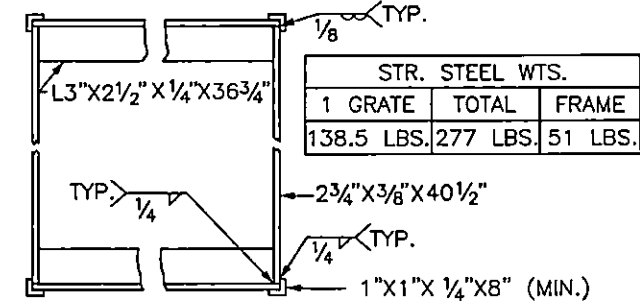


PLAN



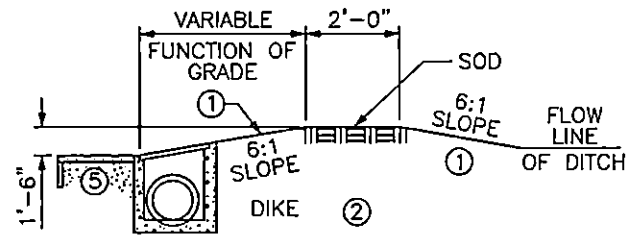
SECTION D-D

DETAIL OF GRATE  
(TWO REQUIRED)

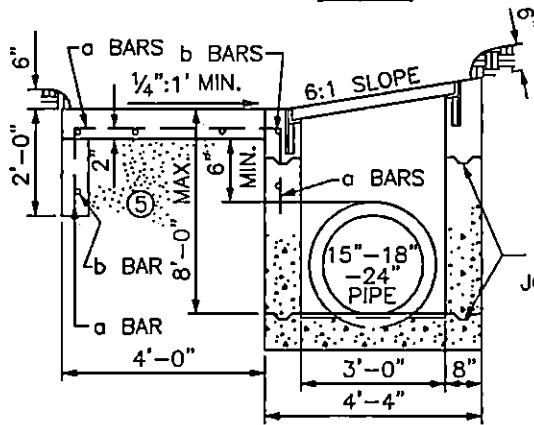


DETAIL OF FRAME

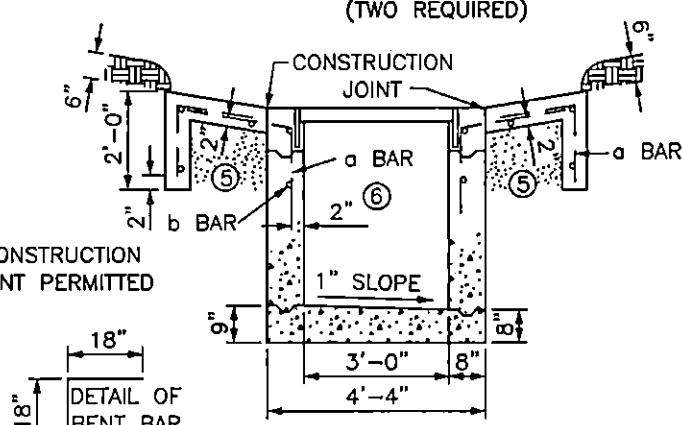
STR. STEEL WTS.		
1 GRATE	TOTAL	FRAME
138.5 LBS.	277 LBS.	51 LBS.



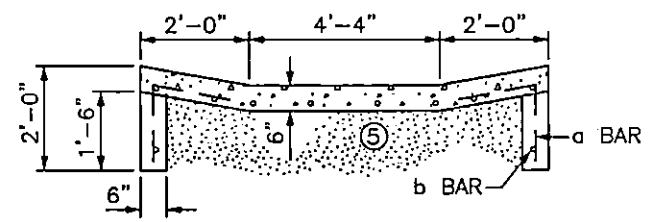
SECTION OF DIKE



SECTION B-B



SECTION A-A



SECTION C-C

- 6 : 1 Slopes are with reference to ditch grade.
- When a box inlet is placed in a sag, omit the earth dike and longitudinal slope of the grate, and provide a concrete apron on each side of the inlet.
- Rate of increase or decrease 0.36 cu. yd. per foot in height.
- Deduct approximately 0.1 cu. yd. of concrete per pipe.
- Compact this volume with D.G.A. base or equivalent.
- Steps are required for depths greater than 4' refer to Std. Dwg. 103.

APPROX. QUANTITIES

TYPE	CONCRETE	REINF. STEEL
3'-9" BOX	③	
SAG	4.4 CU. YD. ④	282 LBS.
GRADE	3.4 CU. YD. ④	192 LBS.

BILL OF REINFORCEMENT

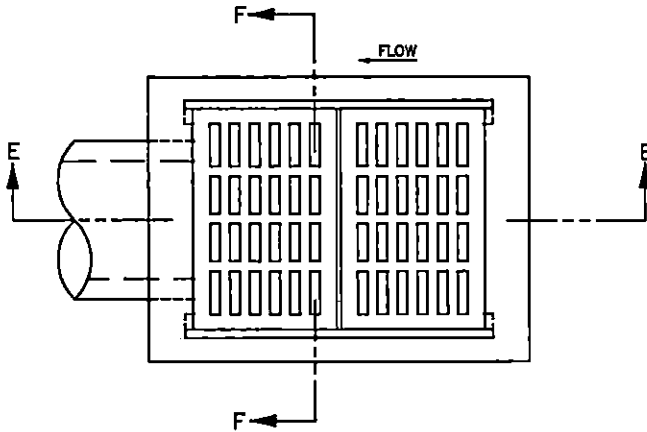
BAR	NO.	SIZE	LENGTH	APPROX. SPACING
a	40 OR 56	#5	3'-0"	12" C TO C
b	25 OR 40	#4	4'-0"	AS SHOWN



DIVISION OF ENGINEERING

SURFACE INLET TYPE "A"

STANDARD DRAWING NO.	120
APPROVAL:	DATE 9/22/17
URBAN COUNTY ENGINEER	DATE 9/22/17
COMMISSIONER	DATE

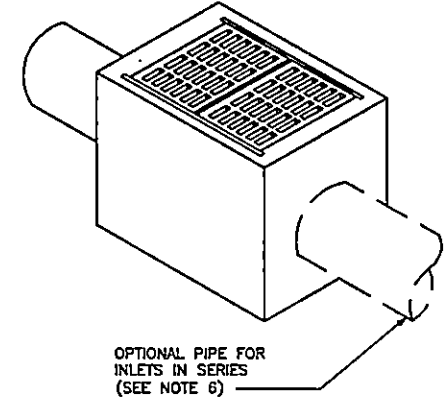


PLAN VIEW

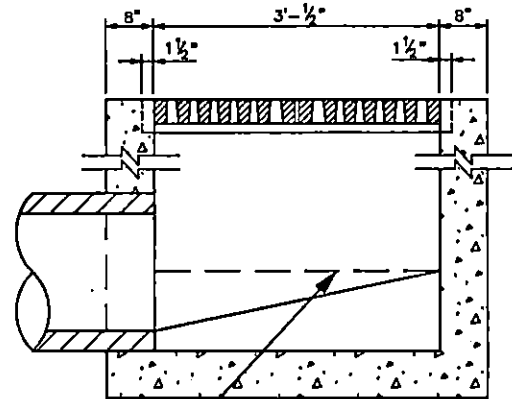
**NOTES:**

1. NO. 5 STEEL SHALL BE USED THROUGHOUT ON 12" CENTERS.
2. ALL STEEL SHALL HAVE A 2" MINIMUM CLEARANCE TO ANY CONCRETE FACE.
3. NO STEEL IS REQUIRED IN THE BOTTOM SLAB.
4. ALL VERTICAL STEEL SHALL EXTEND 4" INTO BOTTOM SLAB.
5. FOR USE IN PAVED AREAS ONLY.
6. PROVIDE MINIMUM 0.1" SLOPE THROUGH STRUCTURE FOR PIPES IN SERIES. CARRY TROUGH THROUGH. ONLY STRAIGHT THROUGH CONNECTIONS ARE ALLOWED.

**ISOMETRIC VIEW**

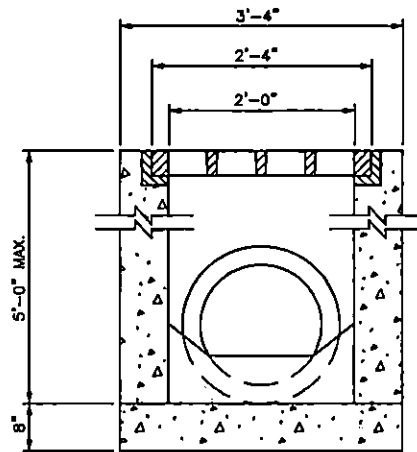


OPTIONAL PIPE FOR INLETS IN SERIES (SEE NOTE 6)

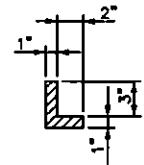
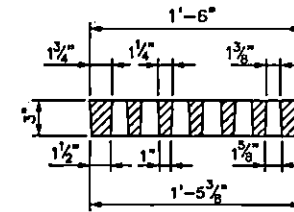
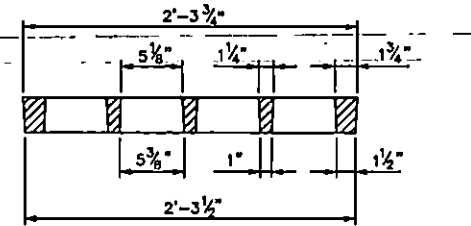


TOP OF BENCH IF PIPE RUNS STRAIGHT THROUGH INLET

SECTION E-E



SECTION F-F



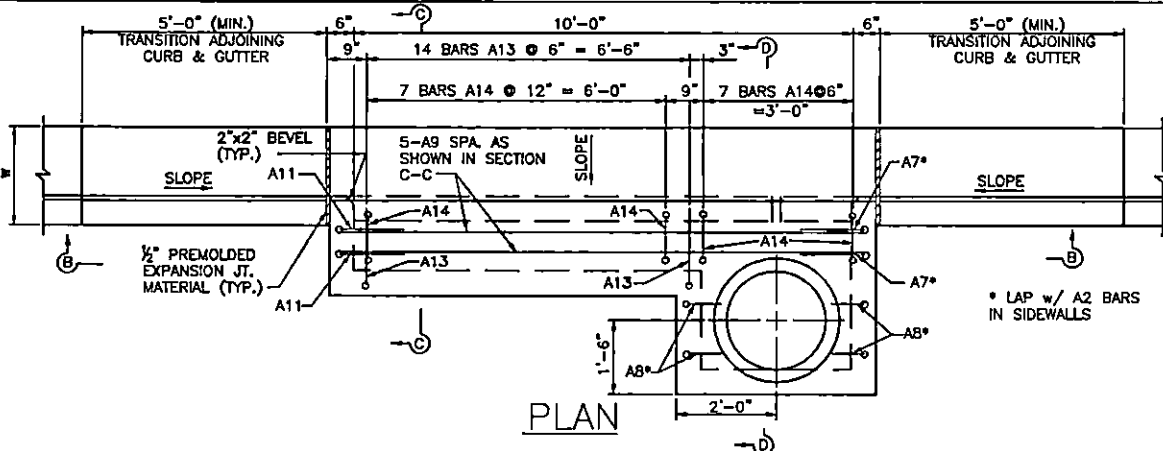
**GRATE DETAILS**



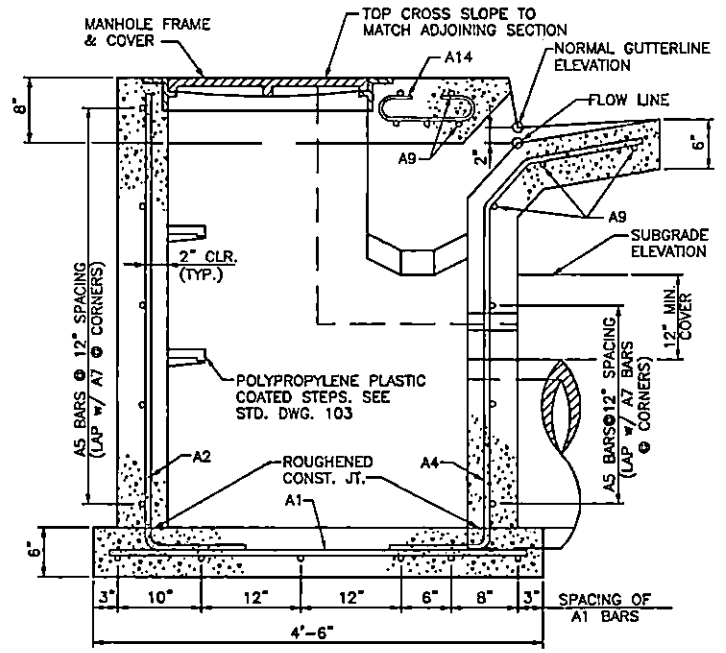
DIVISION OF ENGINEERING

SURFACE INLET TYPE "B"

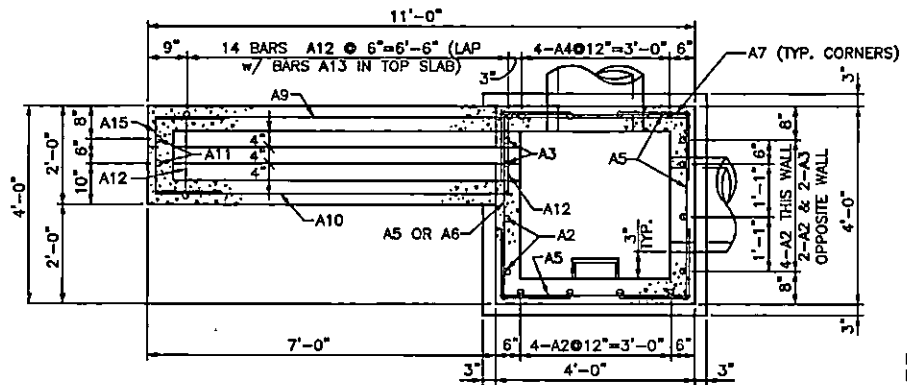
STANDARD DRAWING NO.	121
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



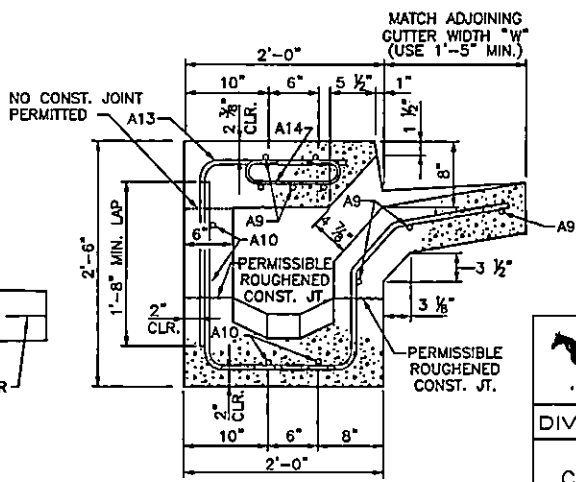
PLAN



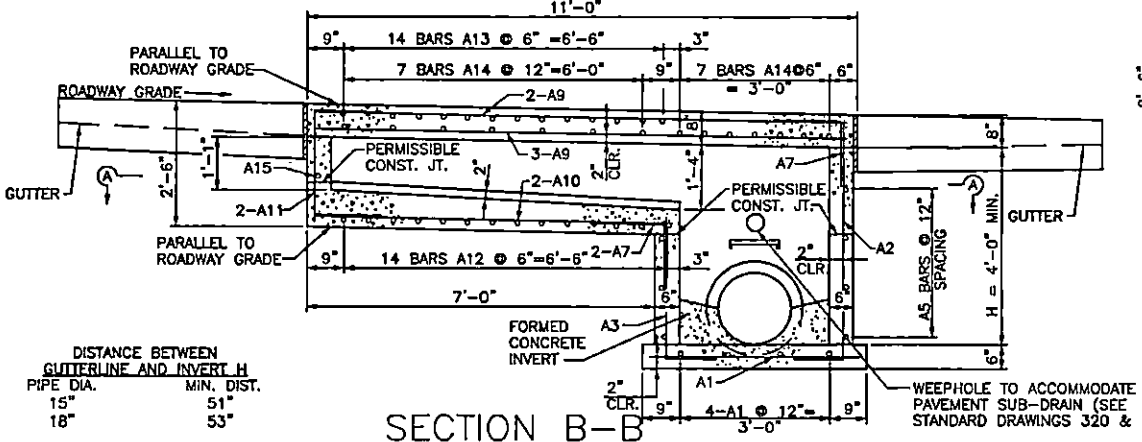
SECTION D-D



SECTION A-A



SECTION C-C




SECTION B-B

DISTANCE BETWEEN GUTTERLINE AND INVERT H. PIPE DIA. MIN. DIST.

15"	51"
18"	53"


SEE STD. DWG. 122-2 FOR BILL OF REINFORCEMENT & ADDITIONAL DETAILS

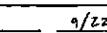
 **LEXINGTON**

DIVISION OF ENGINEERING

CURB BOX INLET TYPE "A"  
4'X4' BOX  
15"-18" PIPES

STANDARD DRAWING NO. 122-1

APPROVAL:  9/22/17

URBAN COUNTY ENGINEER  DATE 9/22/17

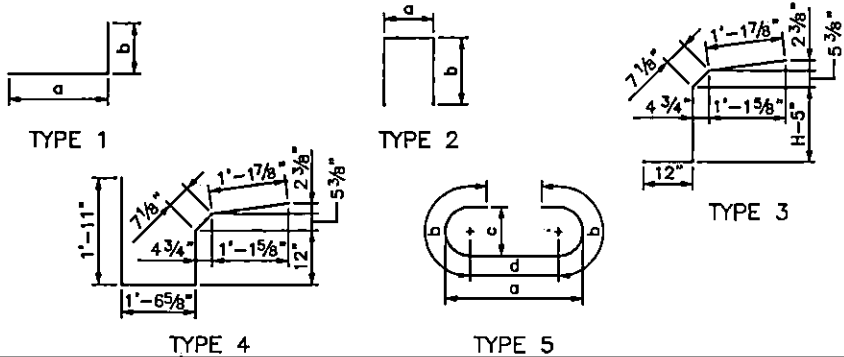
COMMISSIONER \_\_\_\_\_ DATE \_\_\_\_\_

## BILL OF REINFORCEMENT

MARK	TYPE	SIZE	NO.	LENGTH		LOCATION	a		b		c		d	
				FT.	IN.		FT.	IN.	FT.	IN.	FT.	IN.		
A1	STR	#5	10	4	2	FOOTING								
A2	1	#5	10	H+(1'-10")		CHAMBER WALLS	1	0	H+10"					
A3	1	#5	2	H-4"		CHAMBER WALLS	1	0	H-(1'-4")					
A4	3	#5	4	H+(2'-4")		CHAMBER FRONT WALL								
A5	STR	#5	15*	3	8	CHAMBER WALLS								
A6	STR	#5	2	2	2	CHAMBER ABOVE THROAT								
A7	1	#5	19*	2	8	CORNERS	1	4	1	4				
A8	1	#5	4	2	1	CHAMBER WALLS & TOP	1	4	0	9				
A9	STR	#5	8	10	8	TOP SLAB & APRON								
A10	STR	#5	4	7	2	THROAT								
A11	2	#5	2	4	8	THROAT	2	1 7/8	1	4				
A12	4	#5	14	6	1	THROAT & APRON								
A13	1	#5	14	3	5	THROAT	1	11	1	6				
A14	5	#3	14	1	11	TOP SLAB	0	11 1/2	0	7	0	3	0	8 1/2
A15	2	#5	1	4	2	END THROAT	1	6	1	4				

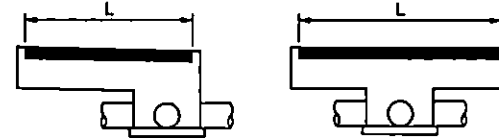
\* NO. OF BARS REQUIRED FOR H=4'-0"  
ADD OR DEDUCT 4-A5 & 4-A7 FOR EACH 1'-0" INCREASE OR DECREASE IN H.

### BAR TYPES



**NOTES:**

1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI. STEEL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60. ALL EXPOSED EDGES SHALL BE BEVELED 3/4" UNLESS OTHERWISE SHOWN.
2. THIS DRAWING DEPICTS A CURB BOX INLET IN A GRADE SITUATION. FOR CURB BOX INLET IN SAG SITUATION, DETAILS SHALL BE MODIFIED AS INDICATED IN DETAIL 'A'.
3. THE STANDARD OPENING LENGTH IS 10'-0" AS DETAILED HERE. THIS LENGTH MAY BE INCREASED OR DECREASED BASED ON HYDRAULIC ANALYSIS AND APPROVAL BY THE LEXINGTON-FAYETTE COUNTY URBAN GOVERNMENT ENGINEER. MODIFICATION TO THE OPENING LENGTH WILL REQUIRE MODIFICATION OF LENGTH OF BARS A9 & A10 AND INCREASE OR DECREASE IN NUMBER OF BARS A12, A13 & A14 MAINTAINING THE SAME MAXIMUM SPACING SHOWN ON THIS DRAWING.
4. MAXIMUM "H" FOR APPLICATION OF THIS DRAWING SHALL BE 10 FEET.
5. FIELD BEND OR CUT BARS A2, A4, AND A5 AS NECESSARY WHERE PIPES PENETRATE CHAMBER WALLS.
6. FOR CURB BOX INLET IN CURVE WITH CURB RADIUS OF LESS THAN 25', LONGITUDINAL BARS A9, A10 SHALL BE SHOP FABRICATED RADIALLY.

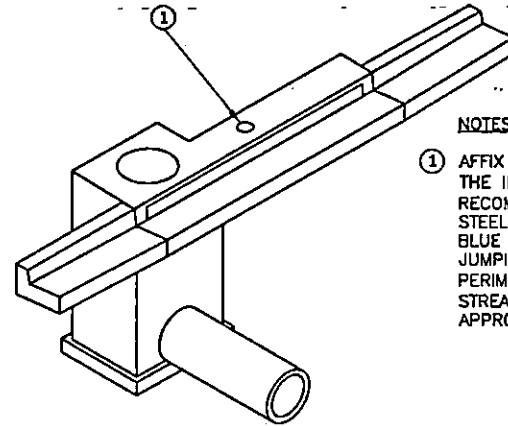


GRADE

SAG

### DETAIL 'A'

APPLICABLE SITUATIONS



**NOTES:**

- ① AFFIX CIRCULAR MARKER TO THE TOP OF THE INLET BOX, PER MANUFACTURER'S RECOMMENDATIONS: 4" DIAMETER STAINLESS STEEL STAMPED DISK WITH BAKED ENAMEL BLUE BACKGROUND. LOGO OF FISH JUMPING OVER WAVES WITH TEXT ON PERIMETER "STORM DRAIN • DRAINS TO STREAM". ALMETEK INDUSTRIES OR APPROVED EQUAL.

WORK THIS DWG. WITH STD. DWG. 122-1

### ISOMETRIC VIEW



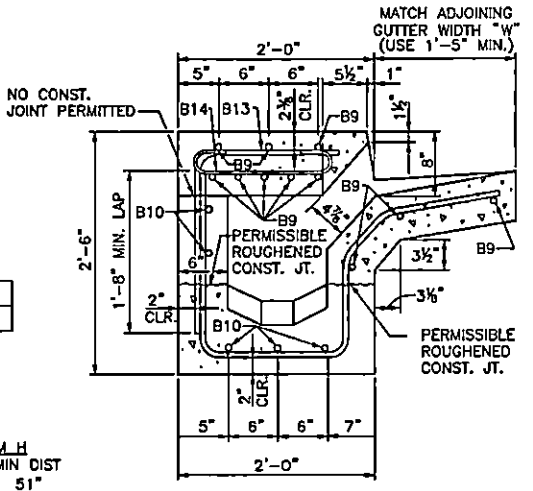
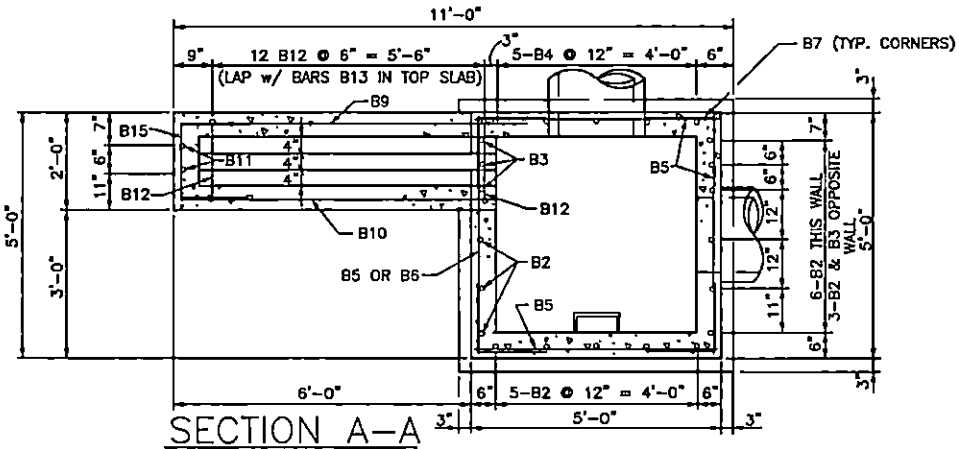
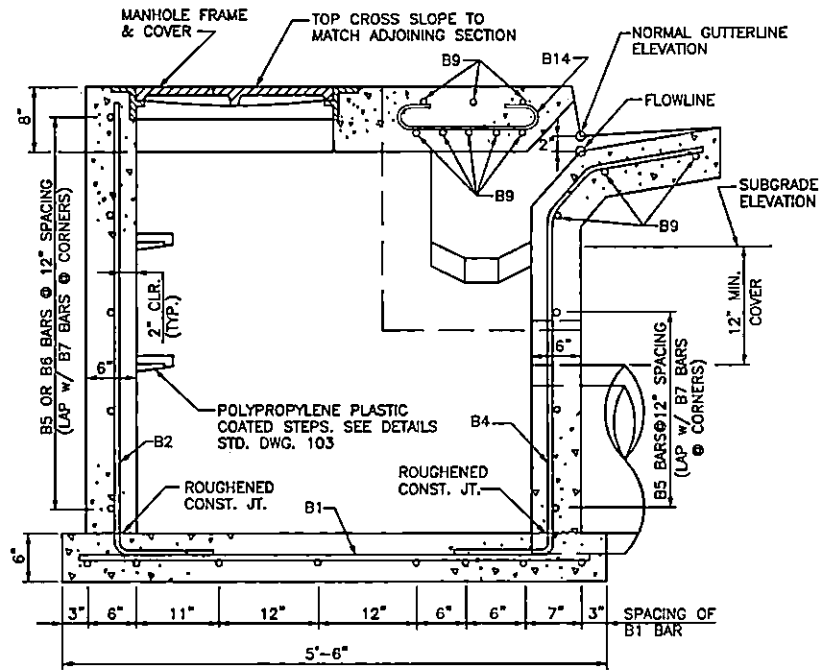
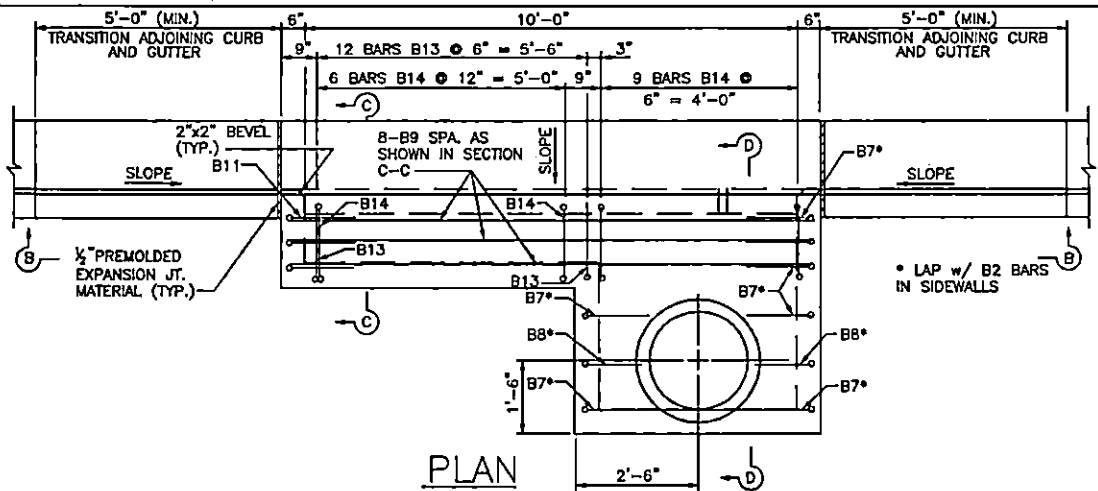
LEXINGTON

DIVISION OF ENGINEERING

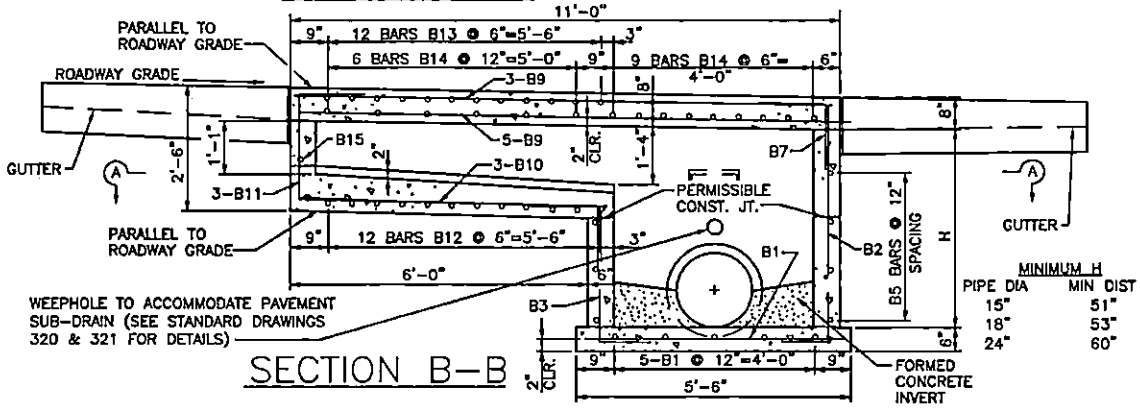
CURB BOX INLET TYPE "A"  
4'X4' BOX  
15'-18" PIPES

STANDARD DRAWING NO. 122-2

APPROVAL: 9/22/17  
URBAN COUNTY ENGINEER DATE  
COMMISSIONER 9/22/17 DATE



SEE STD. DWG. 123-2 FOR BILL OF REINFORCEMENT & ADDITIONAL DETAILS.



**LEXINGTON**

DIVISION OF ENGINEERING

CURB BOX INLET TYPE "B"  
5'x5' BOX  
15"-24" PIPES

STANDARD DRAWING NO. 123-1

APPROVAL: *[Signature]* 9/22/17

URBAN COUNTY ENGINEER *[Signature]* DATE 9/22/17

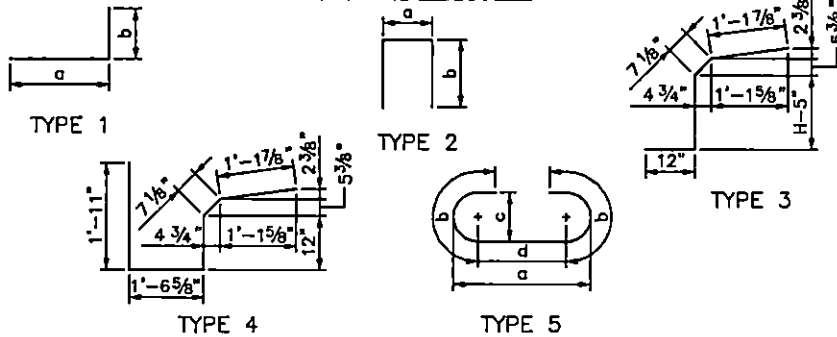
COMMISSIONER *[Signature]* DATE

## BILL OF REINFORCEMENT

MARK	TYPE	SIZE	NO.	LENGTH		LOCATION	a		b		c		d	
				FT.	IN.		FT.	IN.	FT.	IN.	FT.	IN.		
B1	STR	#5	13	5	2	FOOTING								
B2	1	#5	14	H+(1'-10")		CHAMBER WALLS	1	0	H+10"					
B3	1	#5	3	H-4"		CHAMBER WALLS	1	0	H-(1'-4")					
B4	3	#5	5	H+(2'-4")		CHAMBER FRONT WALL								
B5	STR	#5	15*	4	8	CHAMBER WALLS								
B6	STR	#5	2	3	2	CHAMBER ABOVE THROAT								
B7	1	#5	25*	2	8	CORNERS	1	4	1	4				
B8	1	#5	2	2	6	CHAMBER WALLS & TOP	1	4	1	2				
B9	STR	#5	11	10	8	TOP SLAB & APRON								
B10	STR	#5	5	6	2	THROAT								
B11	2	#5	3	4	8	THROAT	2	1 5/8	1	4				
B12	4	#5	12	6	1	THROAT & APRON								
B13	1	#5	12	3	5	THROAT	1	11	1	6				
B14	5	#5	15	2	4	TOP SLAB	1	5	0	7	0	3	1	2
B15	2	#5	1	4	1	END THROAT	1	6	1	4				

\* NO. OF BARS REQUIRED FOR H=4'-0"  
ADD OR DEDUCT 4-B5 & 4-B7 FOR EACH 1'-0" INCREASE OR DECREASE IN H.

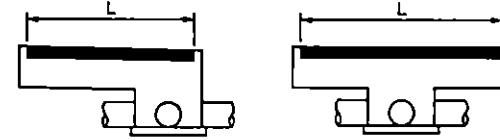
### BAR TYPES



**NOTES:**

1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI. STEEL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60. ALL EXPOSED EDGES SHALL BE BEVELED 3/4" UNLESS OTHERWISE SHOWN.
2. THIS DRAWING DEPICTS A CURB BOX INLET IN A GRADE SITUATION. FOR CURB BOX INLET IN SAG SITUATION, DETAILS SHALL BE MODIFIED AS INDICATED IN DETAIL 'A'.
3. THE STANDARD OPENING LENGTH IS 10'-0" AS DETAILED HERE. THIS LENGTH MAY BE INCREASED OR DECREASED BASED ON HYDRAULIC ANALYSIS AND APPROVAL BY THE LEXINGTON-FAYETTE COUNTY URBAN GOVERNMENT ENGINEER. MODIFICATION TO THE OPENING LENGTH WILL REQUIRE MODIFICATION OF LENGTH OF BARS B9 & B10 AND INCREASE OR DECREASE IN NUMBER OF BARS B12, B13 & B14 MAINTAINING THE SAME MAXIMUM SPACING SHOWN ON THIS DRAWING.
4. MAXIMUM "H" FOR APPLICATION OF THIS DRAWING SHALL BE 10 FEET.
5. FIELD BEND OR CUT BARS B2, B4, AND B5 AS NECESSARY WHERE PIPES PENETRATE CHAMBER WALLS.
6. FOR CURB BOX INLET IN CURVE WITH CURB RADIUS OF LESS THAN 25', LONGITUDINAL BARS B9, B10 SHALL BE SHOP FABRICATED RADIALLY.
7. 30" PIPE MAY BE APPROVED IF BOTH PIPES ARE INSTALLED ON THE SAME LINE.

LEXINGTON -- FAYETTE URBAN COUNTY GOVERNMENT

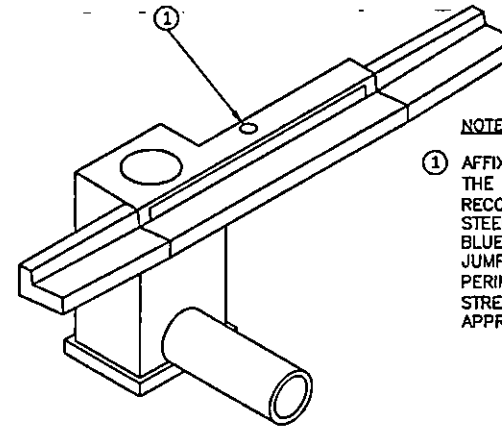


GRADE

SAG

### DETAIL 'A'

APPLICABLE SITUATIONS



**NOTES:**

- ① AFFIX CIRCULAR MARKER TO THE TOP OF THE INLET BOX, PER MANUFACTURER'S RECOMMENDATIONS: 4" DIAMETER STAINLESS STEEL STAMPED DISK WITH BAKED ENAMEL BLUE BACKGROUND. LOGO OF FISH JUMPING OVER WAVES WITH TEXT ON PERIMETER "STORM DRAIN \* DRAINS TO STREAM". ALMETEK INDUSTRIES OR APPROVED EQUAL.

WORK THIS DWG. WITH STD. DWG. 123-1

### ISOMETRIC VIEW



**LEXINGTON**

DIVISION OF ENGINEERING

CURB BOX INLET TYPE "B"  
5'X5' BOX  
15"-24" PIPES

STANDARD DRAWING NO.	123-2
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



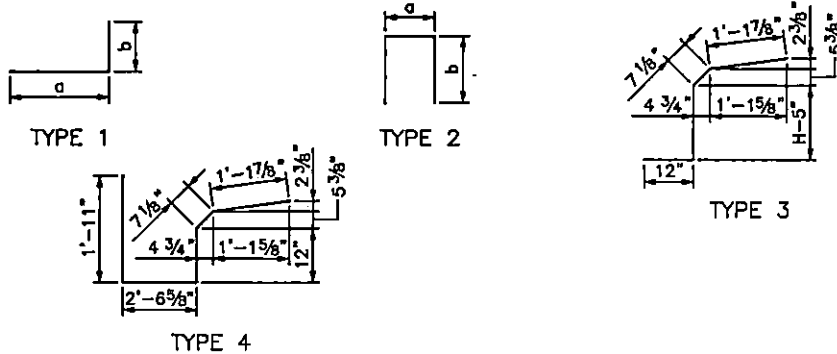


## BILL OF REINFORCEMENT

MARK	TYPE	SIZE	NO.	LENGTH		LOCATION	a		b		c		d	
				FT.	IN.		FT.	IN.	FT.	IN.	FT.	IN.		
C1	STR	#5	7	4	2	FOOTING								
C2	STR	#5	4	3	2	FOOTING								
C3	1	#5	9	H+(1'-10")		CHAMBER WALLS	1	0	H+10"					
C4	1	#5	5	H-4"		CHAMBER WALLS	1	0	H-(1'-4")					
C5	3	#5	4	H+(2'-4")		CHAMBER WALLS								
C6	STR	#5	7*	2	8	CHAMBER WALLS								
C7	STR	#5	6*	3	8	CHAMBER WALLS								
C8	1	#5	19*	2	8	CORNERS	1	4	1	4				
C9	1	#5	5	2	1	CHAMBER WALLS & TOP	1	4	0	9				
C10	STR	#5	5	10	8	THROAT & APRON								
C11	STR	#5	5	7	7	TOP SLAB								
C12	STR	#5	5	7	2	THROAT								
C13	2	#5	5	4	8	END THROAT	2	1	1	4				
C14	4	#5	14	7	1	THROAT & APRON								
C15	1	#5	14	4	5	THROAT	1	11	2	6				
C16	2	#5	1	5	1	END THROAT	2	6	1	4				

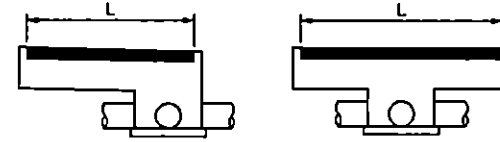
\* NO. OF BARS REQUIRED FOR H=4'-0"  
ADD OR DEDUCT 2-C6, 2-C7 & 4-C8 FOR EACH 1'-0" INCREASE OR DECREASE IN H.

### BAR TYPES



**NOTES:**

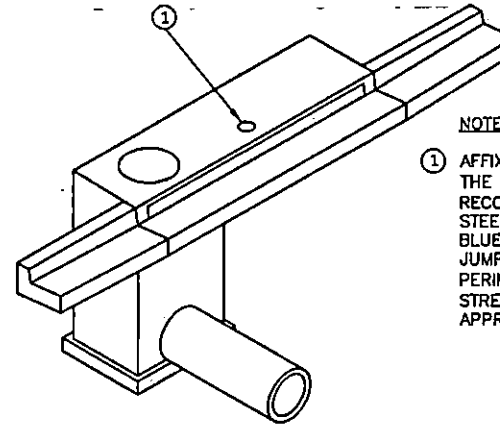
1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI. STEEL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60. ALL EXPOSED EDGES SHALL BE BEVELED 3/4" UNLESS OTHERWISE SHOWN.
2. THIS DRAWING DEPICTS A CURB BOX INLET IN A GRADE SITUATION. FOR CURB BOX INLET IN SAG SITUATION, DETAILS SHALL BE MODIFIED AS INDICATED IN DETAIL 'A'.
3. THE STANDARD OPENING LENGTH IS 10'-0" AS DETAILED HERE. THIS LENGTH MAY BE INCREASED OR DECREASED BASED ON HYDRAULIC ANALYSIS AND APPROVAL BY THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT ENGINEER. MODIFICATION TO THE OPENING LENGTH WILL REQUIRE MODIFICATION OF LENGTH OF BARS C10, C11 & C12 AND INCREASE OR DECREASE IN NUMBER OF BARS C14 & C15 MAINTAINING THE SAME MAXIMUM SPACING SHOWN ON THIS DRAWING.
4. MAXIMUM "H" FOR APPLICATION OF THIS DRAWING SHALL BE 5 FEET.
5. FIELD BEND OR CUT BARS C3, C5, C6 & C7 AS NECESSARY WHERE PIPES PENETRATE CHAMBER WALLS.
6. FOR CURB BOX INLET IN CURVE WITH CURB RADIUS OF LESS THAN 25', LONGITUDINAL BARS C10, C11 & C12 SHALL BE SHOP FABRICATED RADIALLY.



GRADE

SAG

DETAIL 'A'  
APPLICABLE SITUATIONS



**NOTES:**

- ① AFFIX CIRCULAR MARKER TO THE TOP OF THE INLET BOX, PER MANUFACTURER'S RECOMMENDATIONS: 4" DIAMETER STAINLESS STEEL STAMPED DISK WITH BAKED ENAMEL BLUE BACKGROUND. LOGO OF FISH JUMPING OVER WAVES WITH TEXT ON PERIMETER "STORM DRAIN • DRAINS TO STREAM". ALMETEK INDUSTRIES OR APPROVED EQUAL.

WORK THIS DWG. WITH STD. DWG. 124-1

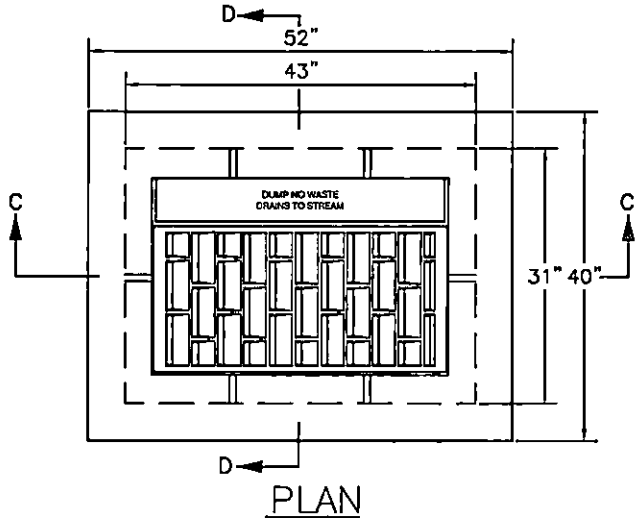
### ISOMETRIC VIEW



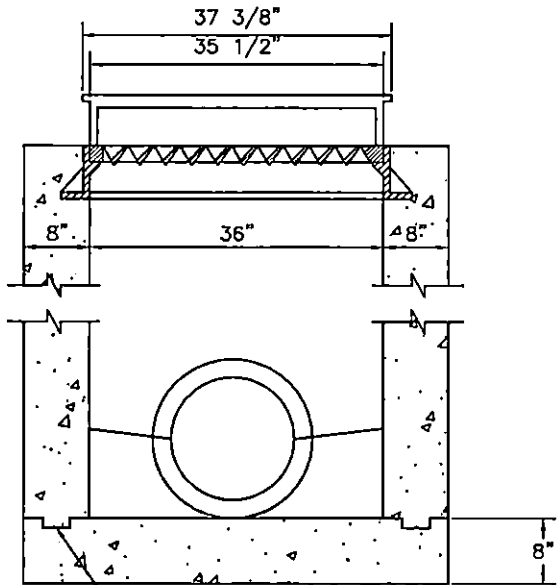
DIVISION OF ENGINEERING

CURB BOX INLET TYPE "C"  
4'X3' BOX  
SINGLE PIPE  
15" OR LESS

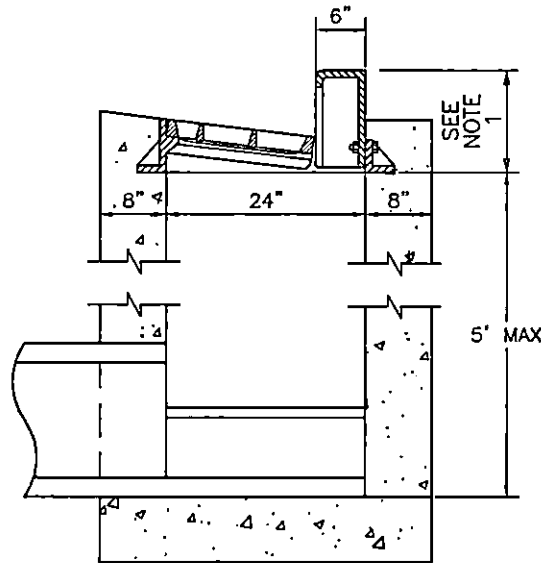
STANDARD DRAWING NO.	124-2
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



PLAN



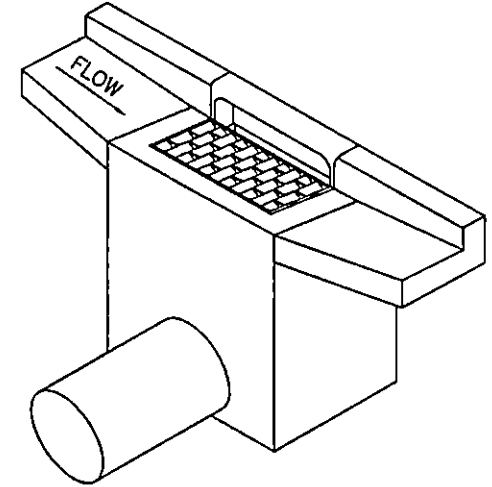
SECTION C-C



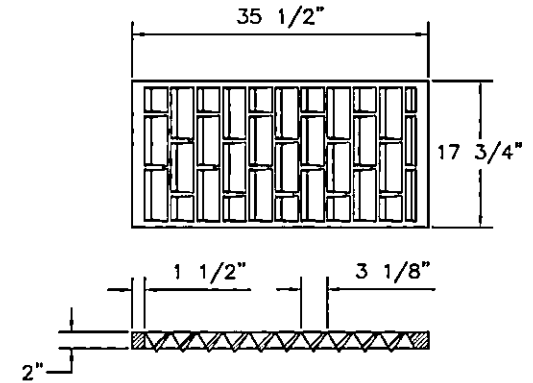
SECTION D-D

**NOTES:**

1. CURB BOX ADJUSTABLE 6" TO 9" TO MATCH TOP OF CURB.
2. NO. 5 STEEL SHALL BE USED THROUGHOUT ON 12" CENTERS. 2" CLEARANCE ON ALL EXTERIOR WALL BARS. EXTERIOR HORIZ. WALL BARS SHALL HAVE A 12" MIN. LAP AT CORNERS.
3. ALL EXPOSED FLATWORK SHALL HAVE A HAND FLOATED AND BROOMED FINISH.
4. NO STEEL IS REQUIRED IN BOTTOM SLAB.
5. ALL VERTICAL STEEL SHALL EXTEND 4" INTO BOTTOM SLAB. VERTICAL STEEL SHALL HAVE A 12" LAP INTO BOTTOM SLAB WITH 3" CLEARANCE FROM EXTERIOR BOTTOM.
6. SET BACK OF FRAME IN CONCRETE TO ANCHOR IN PLACE AFTER IT HAS BEEN ADJUSTED.
7. 18" MAX. PIPE DIAMETER.
8. EAST JORDAN IRON WORKS CATCH BASIN CURB INLET 7035 WITH TYPE M6 GRATE OR EQUIVALENT.
9. TOP OF CURB SECTION SHALL BE CAST WITH "DUMP NO WASTE DRAINS TO STREAM".



ISOMETRIC VIEW



GRATE DETAIL

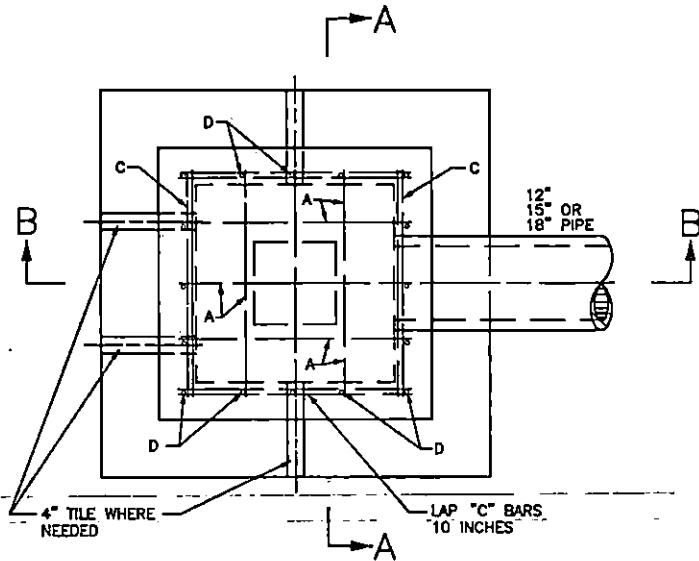


**LEXINGTON**

DIVISION OF ENGINEERING

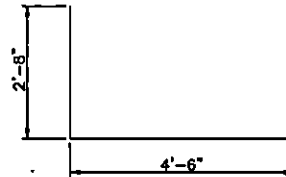
CURB BOX INLET  
TYPE "D"

STANDARD DRAWING NO.	125
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



PLAN

DETAIL C-BAR



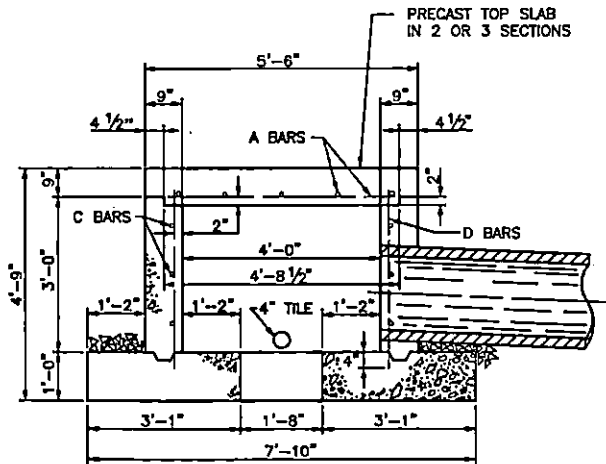
BILL OF REINFORCEMENT

MARK	QUANTITY	SIZE	LENGTH	LOCATION	DESCRIPTION
A	10	1/2" Ø	4'-7"	TOP SLAB	STRAIGHT
C	6	"	9'-9"	WALL	BENT
D	16	"	3'-4"	"	STRAIGHT

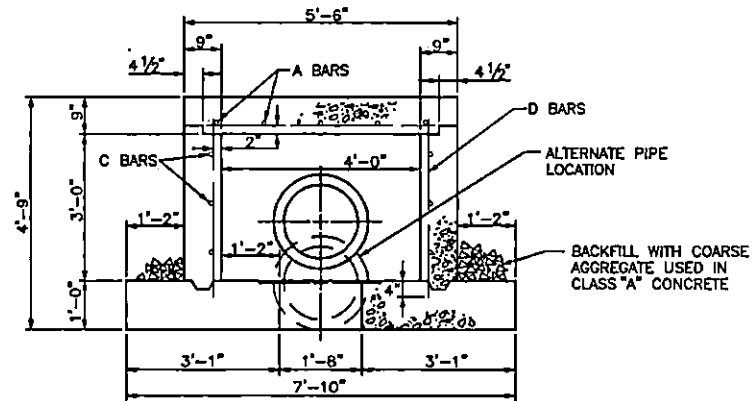
STEEL REINFORCEMENT 105 LBS.  
 12" CLASS "A" CONCRETE 4.61 CU. YDS.  
 15" CLASS "A" CONCRETE 4.59 CU. YDS.  
 18" CLASS "A" CONCRETE 4.58 CU. YDS.

NOTES:

1. LOCATION OF OPENING MAY BE DETERMINED IN THE FIELD FOR A SIDE OR BOTTOM SPRING INLET.
2. TYPE "A" TO BE USED WHEN FILL OVER TOP IS 10' OR MORE.



SECTION B-B



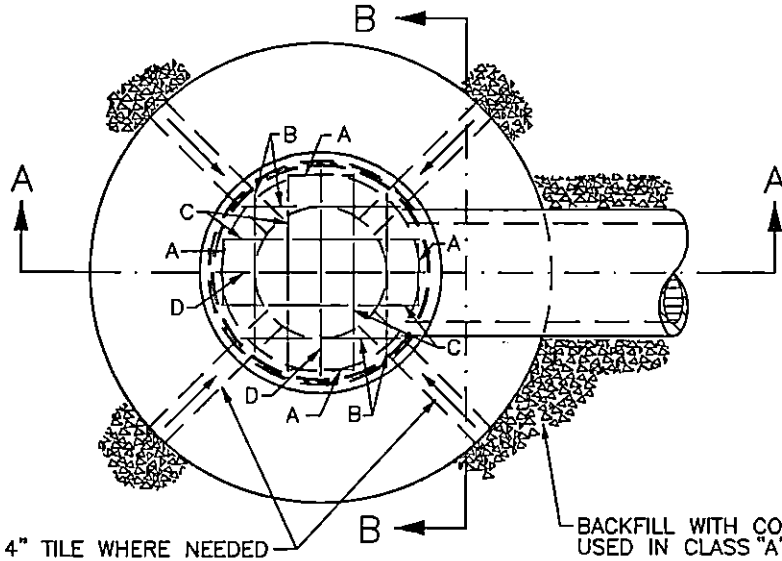
SECTION A-A



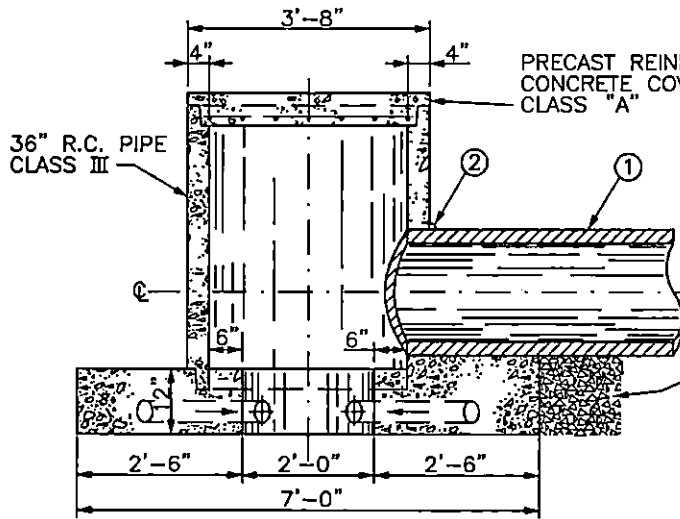
DIVISION OF ENGINEERING

SPRING BOX INLET  
TYPE "A"

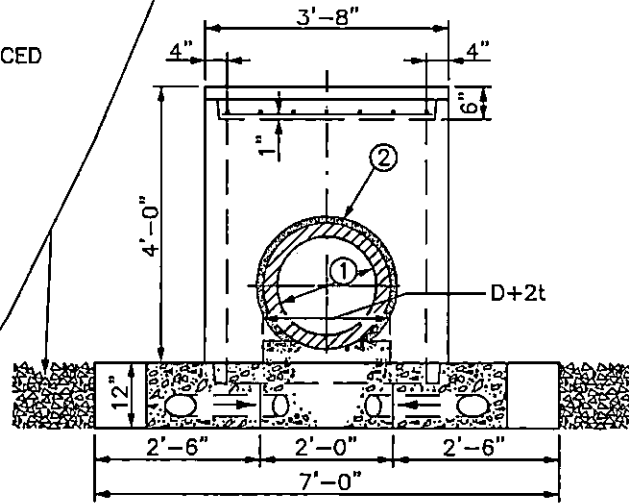
STANDARD DRAWING NO. 126  
 APPROVAL: *[Signature]* 9/22/17  
 URBAN COUNTY ENGINEER *[Signature]* 9/22/17  
 COMMISSIONER DATE



PLAN



SECTION A-A



SECTION B-B

**NOTES:**

1. SPRING BOX INLET TYPE "B" MAY BE USED WHEN FILL OVER TOP IS LESS THAN 10'.  
① 12", 15", OR 18" DIAMETER PIPE OUTLET (SEE PIPE SECTIONS FOR SIZE AND TYPE)
2. MORTAR AROUND PIPE TO PREVENT SEEPAGE.
3. STEEL REINFORCEMENT PLACED 6" ON CENTERS.

STEEL REINFORCEMENT 13 LBS.  
CLASS "A" CONCRETE 1.54 CU. YDS.

**BILL OF REINFORCEMENT**

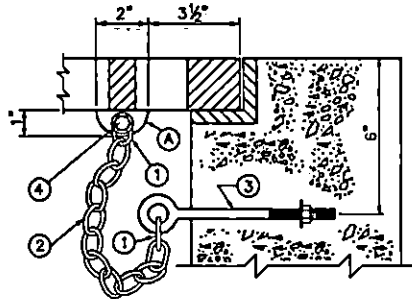
MARK	QUANTITY	SIZE	LENGTH
A	4	NO.3	1'-0"
B	4	"	2'-5"
C	4	"	3'-0"
D	2	"	3'-2"
MARK	LOCATION	DESCRIPTION	
A	TOP	STRAIGHT	
B	"	"	
C	"	"	
D	"	"	



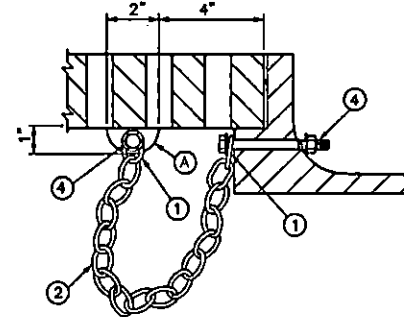
DIVISION OF ENGINEERING

SPRING BOX INLET  
TYPE "B"

STANDARD DRAWING NO.	127
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



GRATE CONNECTED TO WALL

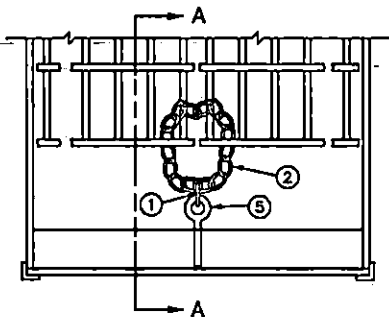


GRATE CONNECTED TO FRAME

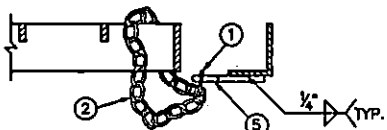
### TYPICAL ILLUSTRATIONS FOR CASTINGS

**NOTES:**

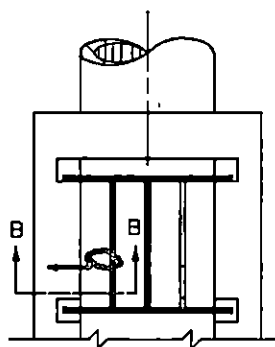
- ① CHAIN SHACKLE, OR COLD SHUT OF AN APPROVED TYPE.
- ② 3/8" PROOF COIL CHAIN OF SUFFICIENT LENGTH TO ALLOW REMOVAL AND DISPLACEMENT OF GRATE, 18" MIN.
- ③ 3/8" x 6" EYE BOLT, NUT, AND WASHER.
- ④ 3/8" HEX HEAD CAP SCREW (GRADE 2), NUT AND WASHERS. LENGTH DETERMINED BY THICKNESS OF FRAME OR GRATE. 7/16" DIA. HOLE FOR CAP SCREW. BATTER THREADS ON CAP SCREW TO PREVENT REMOVAL OF NUT.
- ⑤ 3/8" EYE BOLT (LENGTH DETERMINED BY THE FRAME DIMENSION).
6. ALL EYE BOLTS SHALL HAVE A CONTINUOUS OR SOLID EYE.
7. ALL HARDWARE SHALL BE GALVANIZED AND OF COMMERCIAL QUALITY AND SHALL BE APPROVED BY THE ENGINEER.
8. THE COST OF THE COMPLETE SECURITY DEVICE, INSTALLED, SHALL BE INCIDENTAL TO THE COST OF THE STRUCTURE.
9. THE DESIGNS SHOWN ARE ACCEPTABLE; HOWEVER ARE SUBJECT TO CHANGE IF APPROVED IN WRITING BY THE ENGINEER.



PLAN VIEW

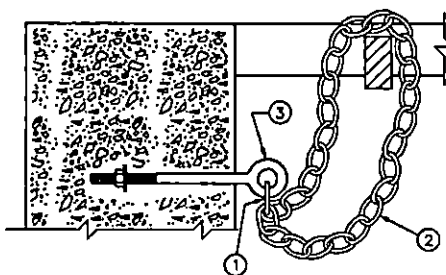


SECTION A-A  
GRATE CONNECTED TO FRAME

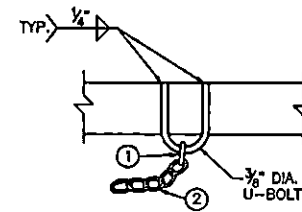


PLAN VIEW

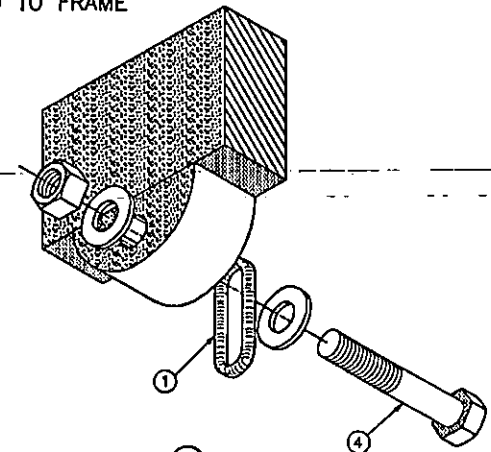
GRATE CONNECTED TO WALL



SECTION B-B




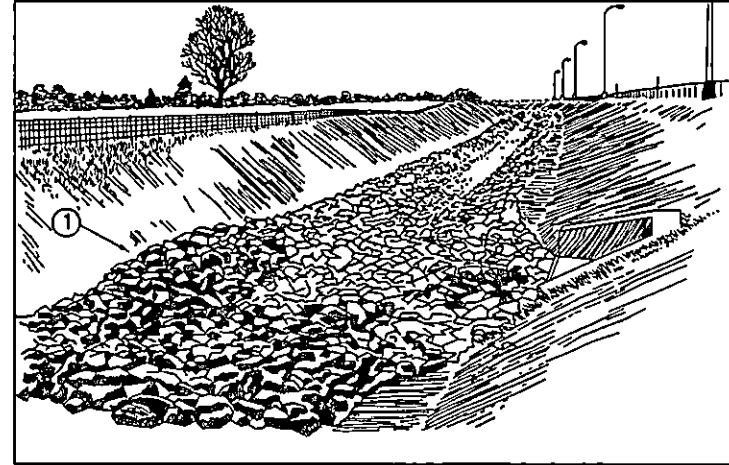
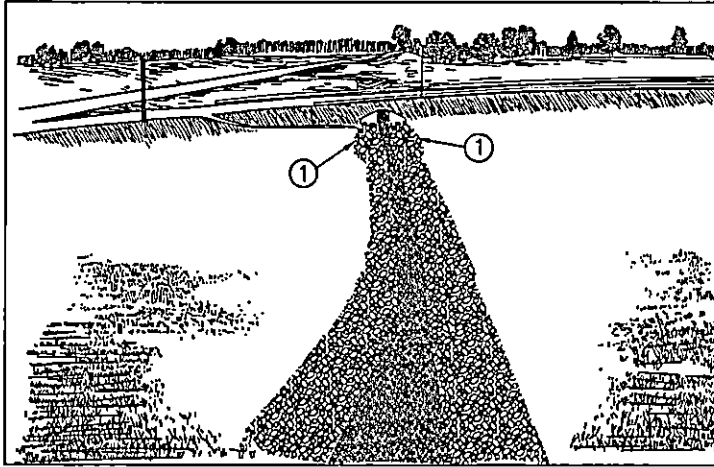
ALTERNATE FOR  
STRUCTURAL STEEL  
MEMBERS



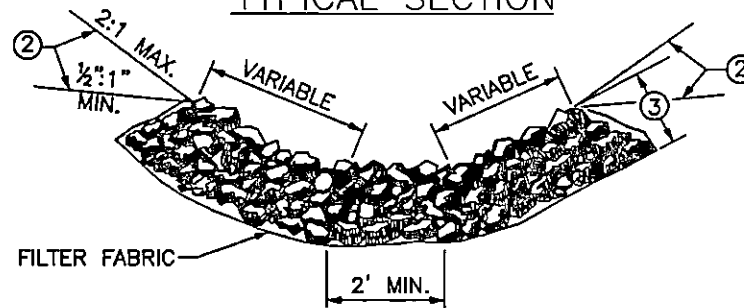
LUG ON CENTER CROSS MEMBER  
AND BOLT ASSEMBLY  
(AXONOMETRIC VIEW)

### TYPICAL ILLUSTRATIONS FOR STRUCTURAL STEEL UNITS

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
SECURITY DEVICES FOR FRAMES AND GRATES	
STANDARD DRAWING NO.	128
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17
	DATE



TYPICAL SECTION



NOTES:

1. AGGREGATE CHANNEL LINING WILL NOT BE REQUIRED IN THE BOTTOM OF THE DITCH WHERE SOLID ROCK IS ENCOUNTERED. SIDE SLOPES SHALL BE LINED.
2. AGGREGATE ESTIMATED ON THE BASIS OF 0.50 TON/SQ. YD. PER FOOT OF DEPTH.

SHEET NOTES: (C)

- ① WIDEN CHANNEL LINING AT STRUCTURES TO PREVENT EROSION.
- ② ALTERNATE LOCATION OF GROUNDLINE.
- ③ MINIMUM DEPTH OF CHANNEL LINING SHALL BE 24". LESSER DEPTHS SHALL HAVE APPROVAL FROM THE ENGINEER. STONE SHALL BE WELL GRADED SO THAT OPENINGS BETWEEN LARGER STONES ARE FILLED WITH SMALLER STONES.

SEE SHEET 130-2 FOR CHANNEL LINING MATERIAL NOTES



LEXINGTON

DIVISION OF ENGINEERING

AGGREGATE CHANNEL LINING

STANDARD DRAWING NO.	130-1
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

**NOTES:**

1. BEDDING MATERIAL SHOULD NOT BE SMALLER THAN KDOT NO. 2 COARSE AGGREGATE STONE. THE REQUIREMENTS FOR KDOT NO. 2 COARSE AGGREGATE STONE ARE AS FOLLOWS:

SIEVE SIZE (INCHES)	PERCENT PASSING
3 1/2	100
2 1/2	70-85
1 1/2	0-10

2. BEDDING SHOULD BE AT LEAST THREE INCHES AND SPREAD UNIFORMLY.
3. PLASTIC FILTER FABRIC MAY BE USED IN PLACE OF OR IN CONJUNCTION WITH GRAVEL FILTERS. THE FOLLOWING PARTICLE SIZE RELATIONSHIPS MUST EXIST:
  - A. FOR FILTER FABRIC ADJACENT TO GRANULAR MATERIALS CONTAINING 50 PERCENT OR LESS (BY WEIGHT) OF FINE PARTICLES (LESS THAN 0.074 mm):
    - 1.)  $\frac{D-(PARTICLE\ DIAMETER)-85-BASE-(mm)}{EOS^* FILTER FABRIC (mm)} > 1$
    - 2.) TOTAL OPEN AREA OF FILTER IS LESS THAN 36 PERCENT.
  - B. FOR FILTER FABRIC ADJACENT TO ALL OTHER SOILS:
    - 1.) EOS\* LESS THAN U.S. STANDARD SIEVE NO. 70
    - 2.) TOTAL OPEN AREA OF FILTER IS LESS THAN 10 PERCENT.
4. NO FILTER FABRIC SHOULD BE USED WITH LESS THAN 4 PERCENT OPEN AREA OR AN EOS\* LESS THAN U.S. STANDARD SIEVE NO. 100.
5. \*EOS - EQUIVALENT OPENING SIZE TO A U.S. STANDARD SIEVE SIZE.
6. THE FOLLOWING CHART SHOWS HOW TO DETERMINE THE DIAMETER OF STONE IN RELATION TO DESIGN VELOCITY.

VELOCITY (FEET/SECOND)	STONE DIAMETER (INCHES)
4	2 1/2
6	5
8	9
10	14

SEE SHEET 130-1 FOR AGGREGATE CHANNEL LINING MATERIAL DRAWINGS



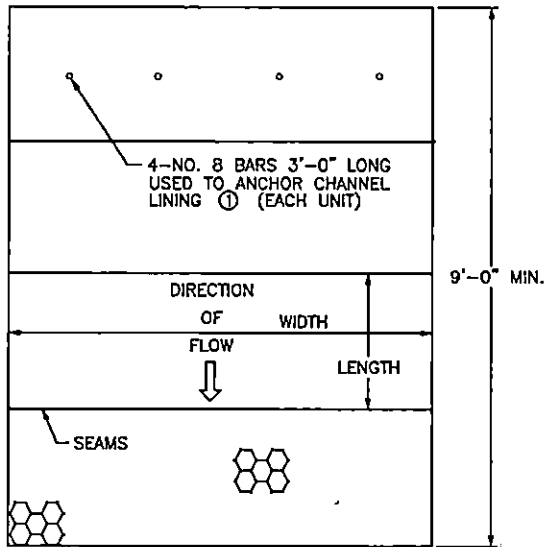
**LEXINGTON**

DIVISION OF ENGINEERING

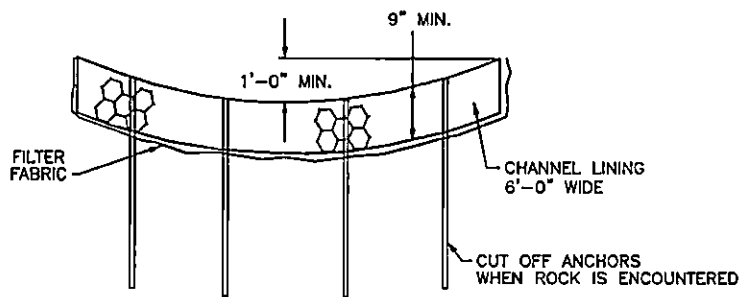
AGGREGATE  
CHANNEL LINING

STANDARD DRAWING NO.	130-2
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

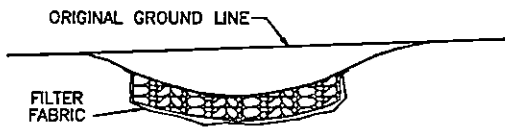




PLAN



ELEVATION

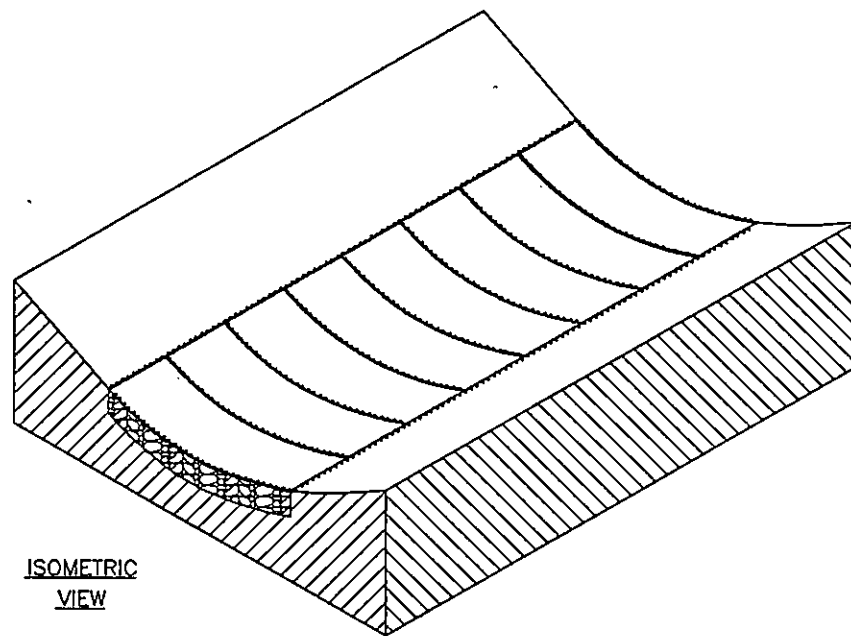


**SHEET NOTES:** ○

① ANCHORS REQUIRED WHEN LINING IS PLACED ON 5% GRADE OR GREATER.

**NOTES:**

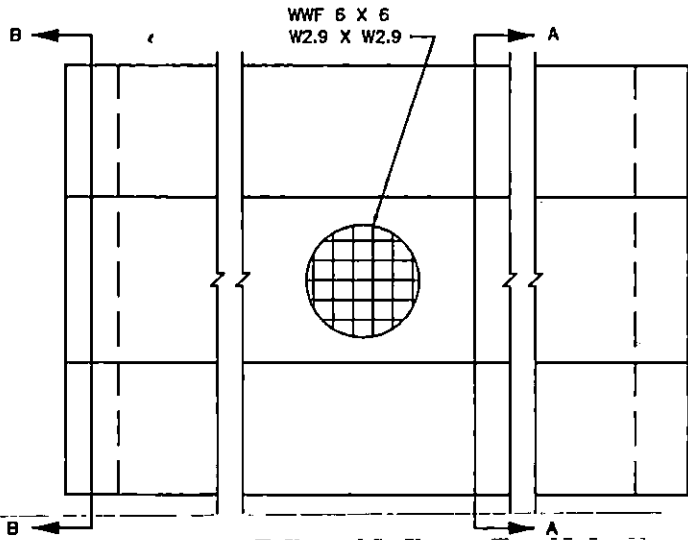
1. SECURE THE LACING WIRE AT THE CORNER OF THE BASKET BY LOOPING AND TWISTING, CONTINUE LACING THROUGHOUT WITH DOUBLE LOOPS AT APPROXIMATELY 5 INCH INTERVALS. EACH UNIT SHALL CONSIST OF LININGS SUPPLIED IN WIDTHS OF 6'-0" AS SHOWN AND LENGTHS IN MULTIPLES OF 3'-0".
2. AGGREGATE ESTIMATED ON THE BASIS OF 0.375 TONS PER SQ. YD.
3. MATTRESS SHALL BE MANUFACTURED FROM WIRE WITH A MINIMUM TENSILE STRENGTH OF 40,000 PSI.
4. STONE SIZE PER MANUFACTURER SPECIFICATIONS.



DIVISION OF ENGINEERING

MATTRESS  
CHANNEL LINING

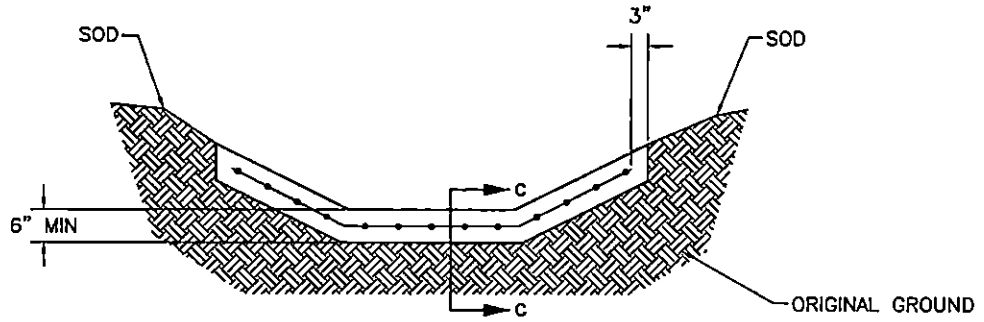
STANDARD DRAWING NO.	131
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



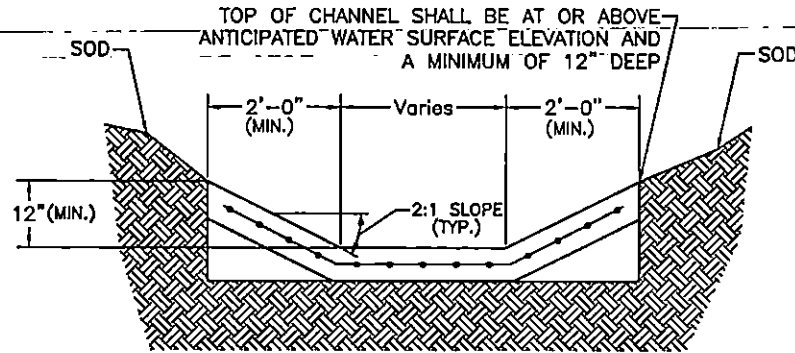
PLAN



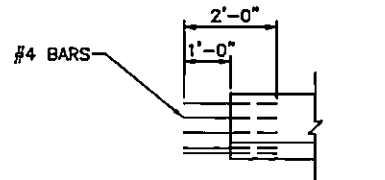
ELEVATION



SECTION A-A




SECTION B-B



SECTION C-C  
(@ CONSTRUCTION JOINT)

**NOTES:**

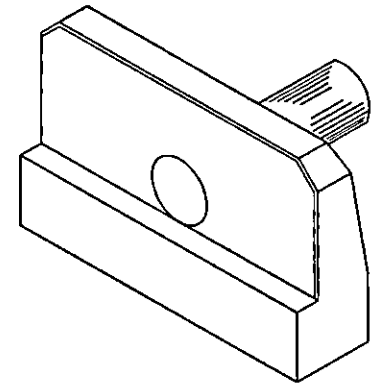
1. USE "CLASS A" CONCRETE THROUGHOUT.
2. COMPACTION, FINISHING AND CURING SHALL BE THE SAME AS REQUIRED FOR CONCRETE SIDEWALK (USE WHITE COMPOUND).
3. IF THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT IN THE POURING OF THE PAVED DITCH, NO. 4 TIE BARS SPACED 6" O.C. SHALL BE USED (SEE SECTION C-C).
4. INTERMEDIATE ANCHORS MAY BE REQUIRED BY THE ENGINEER FOR SPECIAL CASES. A SPECIAL DESIGN WILL BE REQUIRED IN THIS SITUATION.
5. SHOULD THE TERRAIN OF THE EXISTING GROUND BE SO THAT WATER WOULD DRAIN INTO THE DITCH FROM ONE SIDE ONLY, THEN SODDING WILL BE REQUIRED ON THAT ONE SIDE ONLY OF THE DITCH.
6. EXPANSION JOINTS & SEALER REQUIRED ON ENDS ABUTTING STRUCTURES AND ANCHORS ON ENDS NOT ABUTTING STRUCTURES.
7. IF FIBER REINFORCED CONCRETE IS USED THE WWF 6 x 6 MAY BE ELIMINATED.
8. DO NOT PLACE PAVED DITCH ON DISTURBED SOIL.

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
PAVED DITCH	
STANDARD DRAWING NO.	.132
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17
	DATE

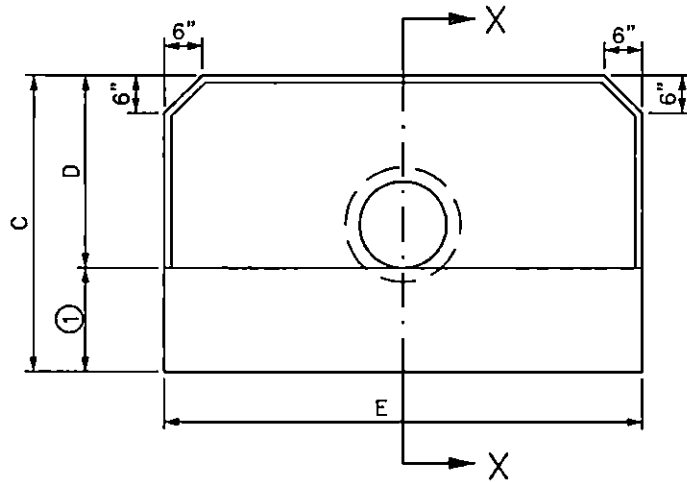
HEADWALL TYPE	DIA. OF PIPE	HEADWALL DIMENSIONS				
		A	B	C	D	E
④ STANDARD	15"	1'-8 1/2"	1'-2 1/2"	4'-3"	2'-9"	6'-9"
	18"	1'-9"	1'-3"	4'-6"	3'-0"	7'-6"
	21"	1'-9 1/2"	1'-3 1/2"	4'-9"	3'-3"	8'-3"
	24"	1'-10"	1'-4"	5'-0"	3'-6"	9'-0"
	27"	1'-10 1/2"	1'-4 1/2"	5'-3"	3'-9"	9'-9"
⑤ RAISED	15"	1'-8 1/2"	1'-2 1/2"	4'-9"	3'-3"	8'-3"
	18"	1'-9"	1'-3"	5'-0"	3'-6"	9'-0"
	21"	1'-9 1/2"	1'-3 1/2"	5'-3"	3'-9"	9'-9"
	24"	1'-10"	1'-4"	5'-6"	4'-0"	10'-6"
	27"	1'-10 1/2"	1'-4 1/2"	5'-9"	4'-3"	11'-3"

NOTES:

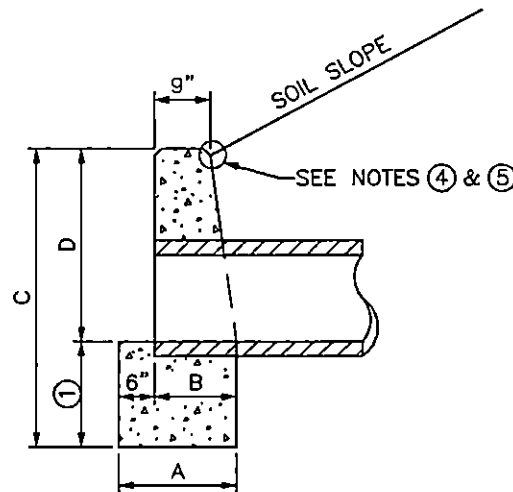
- ① HEIGHT OF FOOTER SHALL BE 18" FOR SOIL AND 12" IN ROCK.
2. ALL EXPOSED EDGES TO BE CHAMFERED 3/4".
3. ALL EXPOSED SURFACES TO HAVE A RUBBED FINISH.
- ④ STANDARD HEADWALLS ARE FLUSH WITH SOIL FILL.
- ⑤ RAISED HEADWALLS PROTRUDE 6" ABOVE SOIL FILL.
6. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "D" IS GREATER THAN 30".




ISOMETRIC VIEW

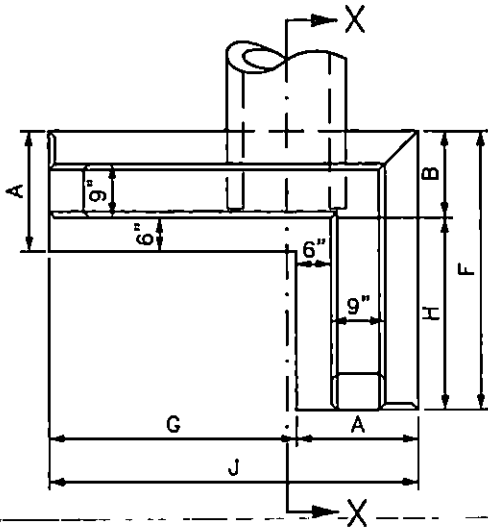


PLAN ELEVATION



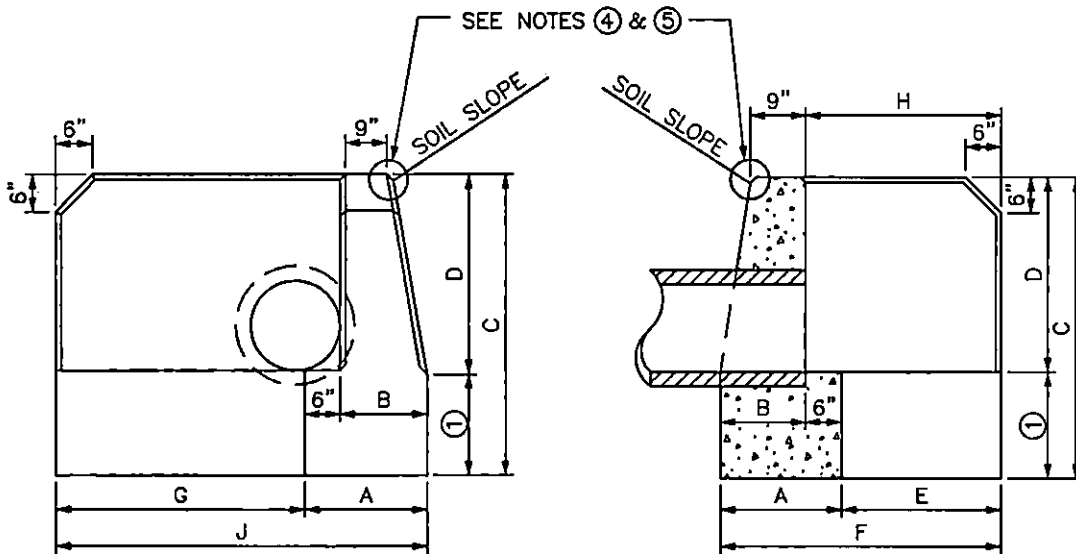
SECTION X-X

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
STRAIGHT HEADWALLS	
STANDARD DRAWING NO.	150
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



HEADWALL TYPE	DIA. OF PIPE	HEADWALL DIMENSIONS								
		A	B	C	D	E	F	G	H	J
④ STANDARD ELL	15"	1'-8 1/2"	1'-2 1/2"	4'-3"	2'-9"	2'-3"	3'-11 1/2"	3'-6"	2'-9"	5'-2 1/2"
	18"	1'-9"	1'-3"	4'-6"	3'-0"	2'-6"	4'-3"	4'-0"	3'-0"	5'-9"
	21"	1'-9 1/2"	1'-3 1/2"	4'-9"	3'-3"	2'-9"	4'-6 1/2"	4'-6"	3'-3"	6'-3 1/2"
	24"	1'-10"	1'-4"	5'-0"	3'-6"	3'-0"	4'-10"	5'-0"	3'-6"	6'-10"
	27"	1'-10 1/2"	1'-4 1/2"	5'-3"	3'-9"	3'-3"	5'-1 1/2"	5'-6"	3'-9"	7'-4 1/2"
⑤ RAISED ELL	15"	1'-8 1/2"	1'-2 1/2"	4'-9"	3'-3"	3'-0"	4'-8 1/2"	4'-3"	3'-6"	5'-11 1/2"
	18"	1'-9"	1'-3"	5'-0"	3'-6"	3'-3"	5'-0"	4'-9"	3'-9"	6'-6"
	21"	1'-9 1/2"	1'-3 1/2"	5'-3"	3'-9"	3'-6"	5'-3 1/2"	5'-3"	4'-0"	7'-0 1/2"
	24"	1'-10"	1'-4"	5'-6"	4'-0"	3'-9"	5'-7"	5'-9"	4'-3"	7'-7"
	27"	1'-10 1/2"	1'-4 1/2"	5'-9"	4'-3"	4'-0"	5'-10 1/2"	6'-3"	4'-6"	8'-1 1/2"

PLAN ELEVATION

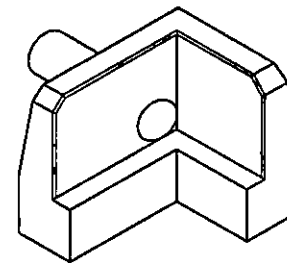


FRONT ELEVATION


SECTION X-X

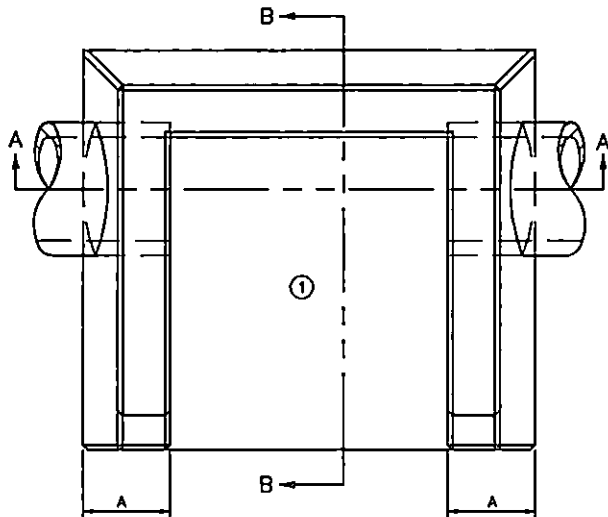
NOTES:

- ① HEIGHT OF FOOTER SHALL BE 18" FOR SOIL AND 12" IN ROCK.
2. ALL EXPOSED EDGES TO BE CHAMFERED 3/4".
3. ALL EXPOSED SURFACES TO HAVE A RUBBED FINISH.
- ④ STANDARD HEADWALLS ARE FLUSH WITH SOIL FILL.
- ⑤ RAISED HEADWALLS PROTRUDE 6" ABOVE SOIL FILL.
6. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "D" IS GREATER THAN 30".



ISOMETRIC VIEW

	<b>LEXINGTON</b>
DIVISION OF ENGINEERING	
ELL HEADWALLS	
STANDARD DRAWING NO.	151
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



PLAN

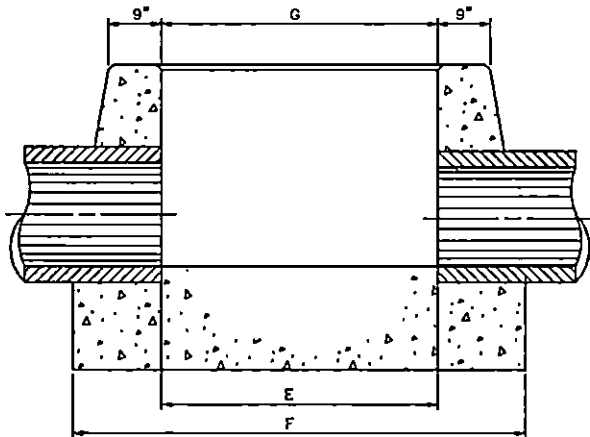
SHEET NOTE: ○

① SOLID CONCRETE BOTTOM REQUIRED.

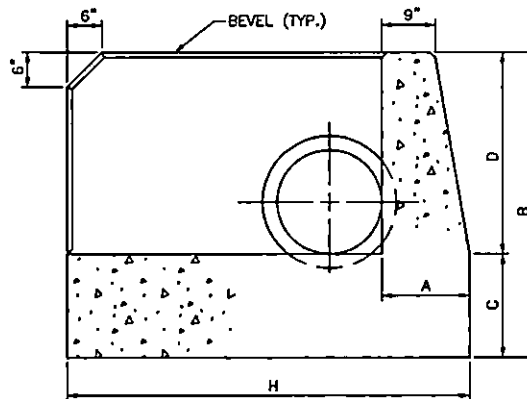
NOTES:

- VOLUME DISPLACED BY BARREL OF PIPE HAS BEEN COMPUTED USING INSIDE DIAMETER OF PIPE.
- CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "D" IS GREATER THAN 30".

DIMENSIONS	DIAMETER OF PIPE				
	15"	18"	24"	30"	36"
A	1'-2"	1'-3"	1'-4"	1'-5"	1'-6"
B	4'-3"	4'-6"	5'-0"	5'-6"	6'-6"
C	1'-6"	1'-6"	1'-6"	1'-6"	2'-0"
D	2'-9"	3'-0"	3'-6"	4'-0"	4'-6"
E	3'-9"	4'-0"	4'-6"	4'-9"	5'-0"
F	6'-2"	6'-6"	7'-2"	7'-7"	8'-0"
G	3'-9"	4'-0"	4'-6"	4'-9"	5'-0"
H	5'-2"	5'-9"	6'-10"	7'-11"	9'-0"
C.Y. CONC. ONE HEADWALL	2.96	3.53	4.72	6.03	8.79



SECTION A-A



SECTION B-B

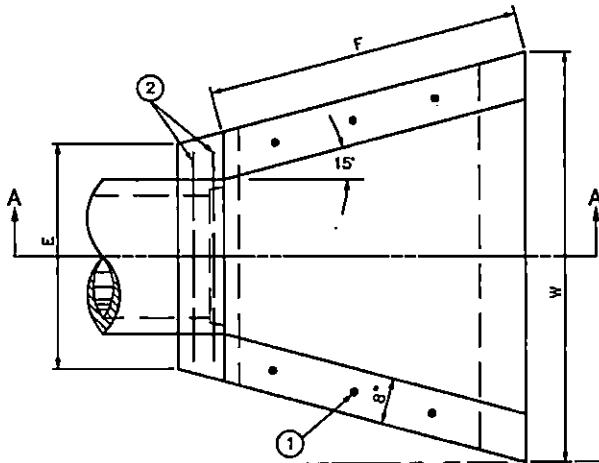


**LEXINGTON**

DIVISION OF ENGINEERING

U-TYPE HEADWALLS

STANDARD DRAWING NO.	152
APPROVAL	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



PLAN VIEW

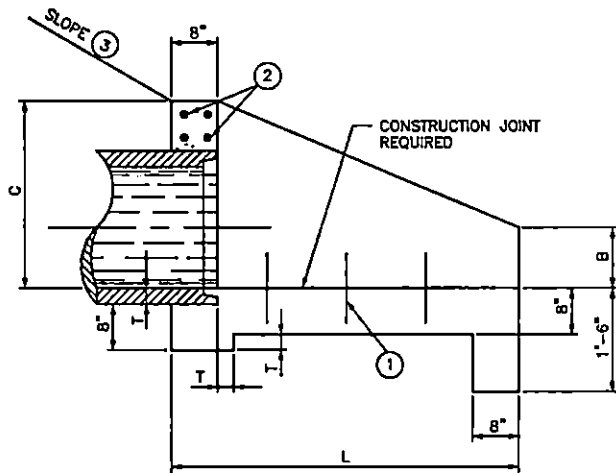
PIPE DIA.	DIMENSIONS							CLASS & CONC.	REINF. STEEL.
	B	C	E	F	L	W	T	C.Y.	LBS.
15"	0'-7 1/2"	2'-0"	2'-9"	3'-5 3/8"	4'-0"	4'-10 3/4"	2 1/4"	0.90	10
18"	0'-9"	2'-3"	3'-0"	3'-11 9/16"	4'-6"	5'-4 15/16"	2 1/2"	0.97	11
21"	0'-10 1/2"	2'-6"	3'-3"	4'-5 13/16"	5'-0"	5'-11 1/8"	2 3/4"	1.17	12
24"	1'-0"	2'-9"	3'-6"	5'-0"	5'-6"	6'-5 3/8"	3"	1.38	12
27"	1'-1 1/2"	3'-0"	3'-9"	5'-6 3/16"	6'-0"	6'-11 9/16"	3 1/4"	1.62	13

SHEET NOTES:

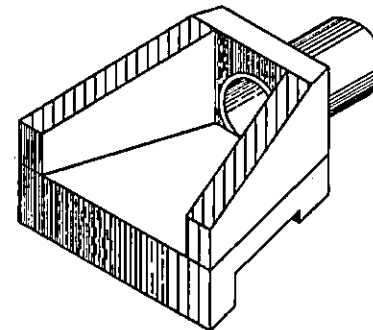
- ① 6 #4 x 1'-0" DOWELS
- ② 4 #4 x ("E" DIMENSION MINUS 4")
- ③ SLOPE SHALL BE WARPED TO FIT HEADWALL WHEN PIPE IS SKEWED AND / OR NORMAL SLOPE VARIES FROM 2:1.

NOTES:

- 1. REINFORCING STEEL MINIMUM GRADE 40, EVENLY SPACED (MIN. SPACING 12" O.C.)
- 2. VOLUME DISPLACED BY PIPE COMPUTED USING INSIDE DIAMETER OF PIPE.
- 3. WING ANGLES AND / OR DIMENSIONS MAY BE ALTERED DURING CONSTRUCTION TO ACCOMMODATE FLOW OF WATER.
- 4. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE, BUT NOT TO EXCEED 5%. FRONT FACE OF HEADWALL SHALL REMAIN VERTICAL.
- 5. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "C" IS GREATER THAN 30".
- 6. ALL EXPOSED EDGES ARE TO HAVE 3/4" CHAMFER.
- 7. SKEWED PIPE REQUIRES SPECIAL DESIGN.



SECTION A-A



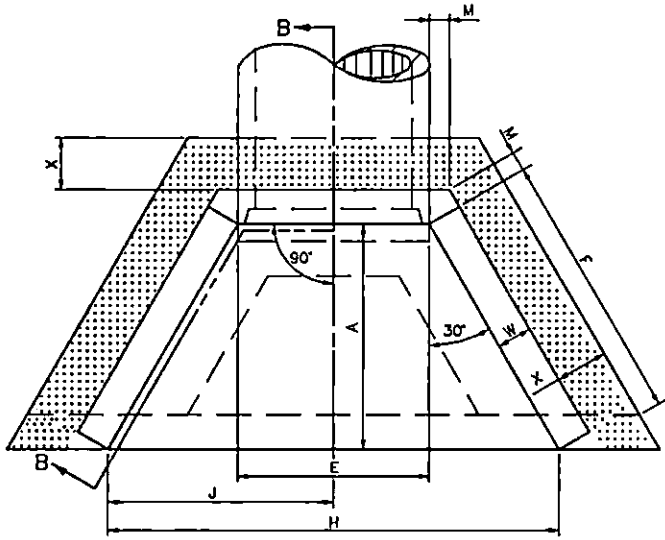
ISOMETRIC VIEW



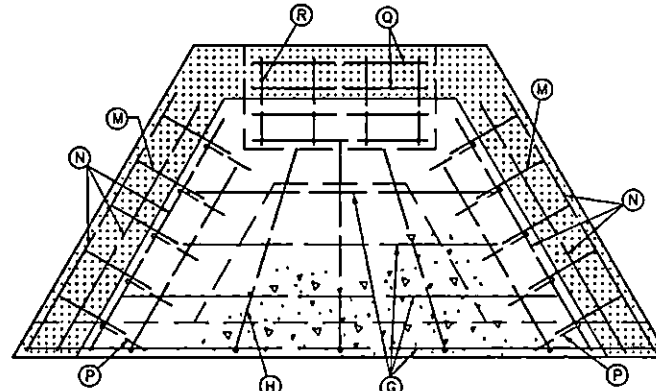
DIVISION OF ENGINEERING

PIPE CULVERT HEADWALLS  
0° SKEW  
15"-27" CIRCULAR PIPE

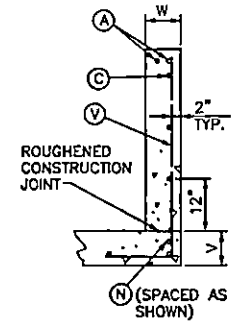
STANDARD DRAWING NO. 153  
APPROVAL: *[Signature]* 9/22/17  
URBAN COUNTY ENGINEER DATE  
COMMISSIONER *[Signature]* 9/22/17 DATE



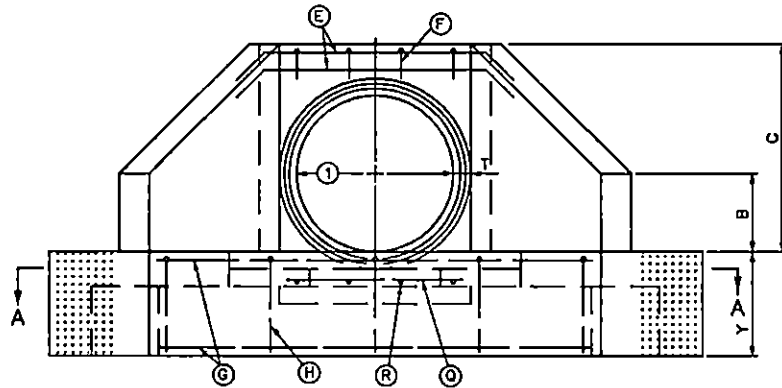
PLAN VIEW



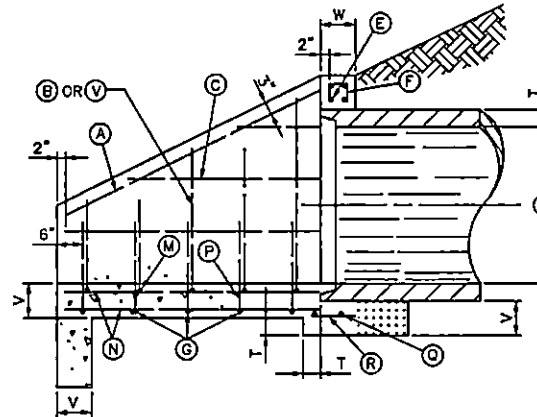
SECTION A-A



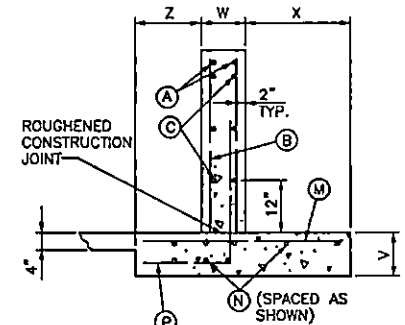
WING SECTION  
30"-60" CIRCULAR PIPE



FRONT ELEVATION



SECTION B-B



WING SECTION  
66"-108" CIRCULAR PIPE


NOTES:

1. [Stippled pattern] APPLIES TO 66" DIAMETER AND GREATER. (CIRCULAR PIPE)
2. SEE SHEETS 2, 3, AND 4 OF CURRENT STD. DWG. 154 FOR DIMENSIONS, QUANTITIES, AND BILL OF REINFORCEMENT.
3. DIMENSIONS FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR DISTANCE UNLESS OTHERWISE NOTED.
4. ENCIRCLED LETTERS,  $\textcircled{\text{O}}$ , INDICATE STEEL BAR LOCATIONS.
5. BARS  $\textcircled{\text{B}}$ ,  $\textcircled{\text{C}}$ ,  $\textcircled{\text{G}}$ ,  $\textcircled{\text{P}}$ ,  $\textcircled{\text{M}}$ ,  $\textcircled{\text{V}}$  ARE SPACED 1'-0" O.C. ALL OTHER BARS SHALL BE EVENLY SPACED.
6. BARS  $\textcircled{\text{B}}$  AND  $\textcircled{\text{V}}$  ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE END OF EACH WING.
7. BARS  $\textcircled{\text{C}}$  ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT TOP OF EACH WING.
8. HEADWALLS LOCATED AT EDGE OF SHOULDER SHALL BE PARALLEL TO CENTERLINE OF THE ROAD.
9. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE, NOT TO EXCEED 5%.
10. FRONT OF HEADWALL AND ENDS OF WINGS SHALL REMAIN VERTICAL.
11. FENCE AND / OR HANDRAIL IS REQUIRED FOR ALL HEADWALLS, SEE STD. DWG. 308.
12. ALL EXPOSED EDGES ARE TO HAVE  $\frac{3}{4}$ " CHAMFER.

SHEET NOTE:  $\textcircled{\text{O}}$

$\textcircled{1}$  DIAMETER OF PIPE

SHEET 1 OF 4

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
PIPE CULVERT HEADWALLS 0° SKEW 30"-108" PIPE	
STANDARD DRAWING NO.	154-1
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

DIMENSION	DIAMETER OF PIPE														DIMENSION			
	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"	108"				
A	3'-9"	4'-4"	4'-11"	5'-6"	6'-1"	6'-8"	7'-5"	8'-0"	8'-7"	9'-2"	9'-9"	10'-4"	10'-11"	11'-6"	A			
B	1'-3"	1'-6"	1'-9"	2'-0"	2'-3"	2'-6"	2'-9"	3'-0"	3'-3"	3'-6"	3'-9"	4'-0"	4'-3"	4'-6"	B			
C	3'-6"	4'-0"	4'-7"	5'-1"	5'-8"	6'-2"	7'-0"	7'-5"	8'-0"	8'-6"	9'-1"	9'-7"	10'-2"	10'-8"	C			
E	3'-1"	3'-8"	4'-3"	4'-10"	5'-5"	6'-0"	6'-7"	7'-2"	7'-9"	8'-4"	8'-11"	9'-6"	10'-1"	10'-8"	E			
F	4'-4"	5'-0"	5'-8"	6'-4"	7'-0"	7'-8"	8'-7"	9'-3"	9'-11"	10'-7"	11'-3"	11'-11"	12'-7"	13'-3"	F			
H	7'-6"	8'-8"	10'-0"	11'-2"	12'-6"	13'-8"	15'-2"	16'-6"	17'-8"	19'-0"	20'-2"	21'-6"	22'-8"	24'-0"	H			
J	3'-9"	4'-4"	5'-0"	5'-7"	6'-3"	6'-10"	7'-7"	8'-3"	8'-10"	9'-6"	10'-1"	10'-9"	11'-4"	12'-0"	J			
M	0'-5"							0'-6"							M			
T	0'-3.5"	0'-4.0"	0'-4.5"	0'-5.0"	0'-5.5"	0'-6.0"	0'-6.5"	0'-7.0"	0'-7.5"	0'-8.0"	0'-8.5"	0'-9.0"	0'-9.5"	0'-10.0"	T			
V	0'-8"							1'-0"							V			
W	0'-8"							0'-10"							W			
X	-----							-----2'-0"-----							-----2'-6"-----	X		
Y	-----							-----							-----2'-0"-----	-----2'-6"-----	-----3'-0"-----	Y
Z	-----							-----							-----	-----1'-3"-----	-----1'-9"-----	Z
CU.YDS.CONC. 2 HEADWALLS	3.36	4.30	5.35	6.53	7.82	9.22	18.76	20.95	23.25	25.67	31.48	34.31	37.25	40.32	CU.YDS.CONC. 2 HEADWALLS			
LBS.STEEL 2 HEADWALLS	281	363	430	496	583	687	1320	1571	1815	2043	2451	2753	3050	3379	LBS.STEEL 2 HEADWALLS			



DIVISION OF ENGINEERING

DIMENSIONS AND QUANTITIES  
30"-108" HEADWALLS  
CIRCULAR PIPE  
0° SKEW

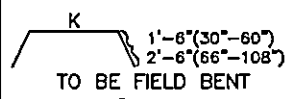
STANDARD DRAWING NO. 154-2  
APPROVAL: 9/22/17  
URBAN COUNTY ENGINEER DATE  
COMMISSIONER 9/22/17 DATE



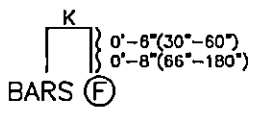
MARK	SIZE	NO				K	MARK	SIZE	NO				K	MARK	SIZE	NO				K	MARK	SIZE	NO				K	MARK	SIZE	NO				K							
		①	FT	IN	FT				IN	①	FT	IN				FT	IN	①	FT				IN	FT	IN	①				FT	IN	FT	IN		①	FT	IN	FT	IN	①	FT
30"						42" (CONTINUED)						54" (CONTINUED)						66" (CONTINUED)						78" (CONTINUED)						90"											
A	5	4	4	8		H	4	5	6	3	4	7	V2	5	4	5	0	3	9	P	5	16	5	0	3	3	G2	4	3	10	6			A	5	4	12	3			
C1	4	2	2	4		N	4	6	5	6			V3	5	4	6	0	4	9	Q	5	3	6	2		G3	4	3	14	0			B1	5	8	3	10				
C2	4	2	4	2		Q	4	2	3	11			V4	5	2	7	0	5	9	R	5	7	2	7		G4	4	3	16	4			B2	5	8	4	9				
E1	5	2	6	4	3	4	V1	5	4	3	6	2	3							M	4	20	3	9		H	4	9	10	5	8	3	B3	5	8	5	9				
E2	5	2	6	8	3	8	V2	5	4	4	6	3	3							N	4	14	9	9		M	4	14	9	9			B4	5	8	6	8				
F	4	3	1	3	0	4	V3	5	4	5	6	4	3							P	5	20	5	6	3	9	P	5	20	5	6	3	9	B5	5	8	7	7			
G1	4	2	3	10										A	5	4	8	4		A	5	4	10	1		Q	5	3	7	5			B6	5	4	8	6				
G2	4	3	6	2										C1	4	2	2	1		B1	5	8	3	0		R	5	8	2	8			C1	4	4	1	11				
H	4	4	5	1	3	5								C2	4	2	4	2		B2	5	8	4	0									C2	4	4	4	0				
N	4	6	4	2			48"										C3	4	2	6	3		B3	5	8	4	11					C3	4	4	6	1					
Q	4	2	2	9		A	5	4	6	11				C4	4	4	7	7		B4	5	8	5	11									C4	4	4	8	3				
R	4	3	0	8		C1	4	2	1	10				E1	5	2	9	3	6	3	B5	5	4	6	10								C5	4	4	10	4				
V1	5	4	3	1	1	10	C2	4	2	3	10			E2	5	2	9	7	6	7	C1	4	4	2	7		A	5	4	11	7			C5	4	12	11	1			
V2	5	4	4	1	2	10	C3	4	2	5	10			F	4	6	1	3	0	4	C2	4	4	4	8		B1	5	8	3	6			E1	5	2	14	2	9	2	
							C4	4	2	6	2			G1	4	2	6	6			C3	4	4	6	9		B2	5	8	4	6			E2	5	2	14	8	9	8	
							E1	5	2	8	1	5	1	G2	4	3	10	0			C4	4	4	8	10		B3	5	8	5	5			F	4	9	1	9	0	6	
							E2	5	2	8	5	5	5	G3	4	3	12	4			C5	4	4	8	9	1	B4	5	8	6	5			G1	4	2	9	6			
							G1	4	5	1	3	0	4	H	4	7	8	0	6	4	E1	5	2	12	5	7	5	B5	5	8	7	4			G2	4	3	13	0		
							G2	4	1	4	0			N	4	6	7	7			E2	5	2	12	11	7	11	B6	5	4	8	4			G3	4	3	16	5		
							G3	4	3	7	5			Q	4	2	5	8			F	4	8	1	9	0	6	C1	4	4	2	10			G4	4	3	18	9		
							G4	4	3	9	9			R	4	6	0	10			G1	4	3	9	2		C2	4	4	4	11			H	4	10	12	1	9	5	
							H	4	6	6	10	5	2	V1	5	4	4	3	3	0	G2	4	3	12	6		C3	4	4	7	0			M	4	22	4	9			
							N	4	6	6	2			V2	5	4	5	3	4	0	G3	4	3	14	10		C4	4	4	9	1			N	4	16	11	1			
							V1	5	4	4	2	4	6	V3	5	4	6	2	4	11	H	4	9	9	10	7	8	C5	4	12	10	5			P	6	22	6	6	4	3
							R	4	5	0	9			V4	5	4	7	2	5	11	M	4	18	3	9		E1	5	2	13	7	8	7	Q	5	4	8	7			
							V1	5	4	3	9	2	6							N	4	14	9	1		E2	5	2	14	2	9	2	R	5	9	3	3				
							V2	5	4	4	9	3	6							P	5	18	5	3	3	6	F	4	9	1	9	0	6								
							V3	5	4	5	9	4	6							Q	5	3	6	10		G1	4	1	9	6											
							H	4	5	5	8	4	0							R	5	7	2	7		G2	4	3	11	10											
							N	4	6	4	10															G3	4	3	15	2											
							Q	4	2	3	4															G4	4	3	17	6											
							R	4	4	0	8															H	4	9	11	0	8	10									
							V1	5	4	3	4	2	1													M	4	22	3	9											
							V2	5	4	4	4	3	1	A	5	4	7	7			A	5	4	10	10		N	4	14	10	5										
							V3	5	2	5	4	4	1	C1	4	2	0	11			B1	5	8	3	4		C2	4	4	3	4										
														C2	4	4	1	5			B2	5	8	4	3		C3	4	4	5	10										
														C3	4	2	5	1			B3	5	8	5	3		C4	4	4	7	11										
														C4	4	4	6	10			B4	5	8	6	2		C5	4	4	9	9										
														E1	5	2	8	8	5	8	C4	4	4	7	7		B5	5	8	7	2										
														E2	5	2	9	0	6	0	C5	4	8	8	4																
														F	4	6	1	3	0	4	E1	5	2	11	9	6	10	C1	4	4	1	7									
														G1	4	1	5	3			E2	5	2	12	3	7	4	C2	4	4	3	8									
														G2	4	3	8	9			F	4	7	1	9	0	6	C3	4	4	5	10									
														G3	4	3	11	0			G1	4	3	8	0		C4	4	4	7	11										
														H	4	6	7	5	5	9	G2	4	3	11	4		C5	4	12	9	9										
														N	4	6	6	10			G3	4	3	13	10		E1	5	2	13	0	8	0								
														Q	4	2	5	1			H	4	7	9	3	7	1	E2	5	2	13	6	8	6							
														R	4	6	0	10			M	4	16	3	9		F	4	8	1	9	0	6								
														V1	5	4	4	0	2	9	N	4	14	8	4		G1	4	1	7	1										

- NOTES:**
- NUMBER OF BARS IN ONE HEADWALL.
  - DIMENSIONS ARE OUT TO OUT OF BARS.
  - ALL BARS ARE STRAIGHT EXCEPT THOSE SHOWN BELOW.

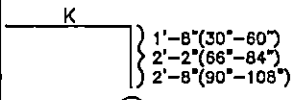
**BENT BAR SHAPES**



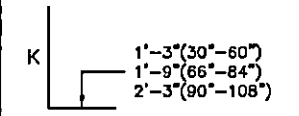
TO BE FIELD BENT BARS (E)



BARS (F)



BARS (H)



BARS (P) AND (V)

SHEET 3 OF 4

LEXINGTON

DIVISION OF ENGINEERING

BILL OF REINFORCEMENT  
30"-90" DIAMETER  
CIRCULAR PIPE HEADWALLS  
0° SKEW

STANDARD DRAWING NO. 154-3

APPROVAL: 9/22/17  
URBAN COUNTY ENGINEER DATE  
COMMISSIONER 9/22/17  
DATE

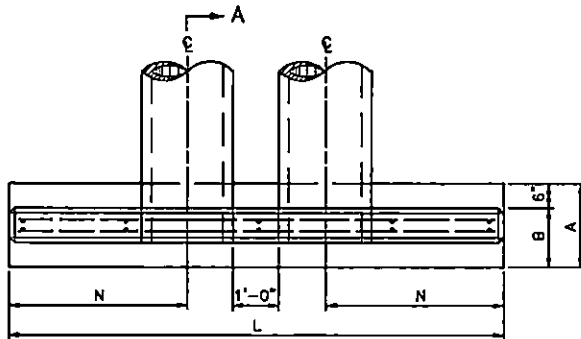


DIMENSIONS AND QUANTITIES

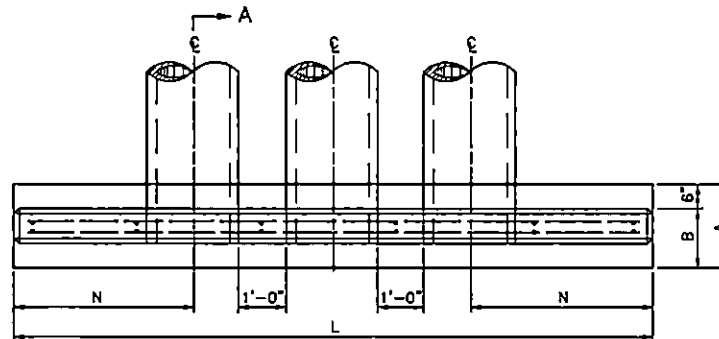
HEADWALL TYPE	PIPE DIA.	A	B	C	E	L	M	N	CU. YD. CONC. 2 HDWLS.
STANDARD DOUBLE LINE	18"	1'-9"	1'-3"	4'-6"	3'-0"	10'-5"	10 $\frac{3}{4}$ "	3'-9"	4.18
	24"	1'-10"	1'-4"	5'-0"	3'-6"	12'-6"		4'-6"	5.65
STANDARD TRIPLE LINE	18"	1'-9"	1'-3"	4'-6"	3'-0"	13'-4"		3'-9"	4.87
	24"	1'-10"	1'-4"	5'-0"	3'-6"	16'-0"		4'-6"	6.68
RAISED DOUBLE LINE	18"	1'-9"	1'-3"	5'-0"	3'-6"	11'-11"		4'-6"	5.28
	24"	1'-10"	1'-4"	5'-6"	4'-0"	14'-0"		5'-3"	7.43
RAISED TRIPLE LINE	18"	1'-9"	1'-3"	5'-0"	4'-0"	14'-10"		4'-6"	6.76
	24"	1'-10"	1'-4"	5'-6"	4'-6"	17'-6"		5'-3"	8.83

NOTES:

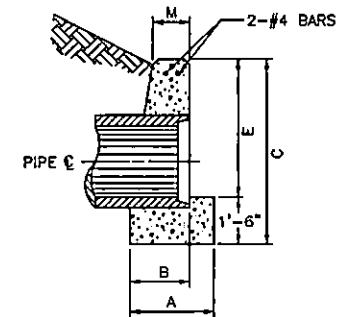
1. ALL VOLUMES ARE IN CUBIC YARDS FOR TWO HEADWALLS; VOLUME DISPLACED BY BARREL OF PIPE HAS BEEN COMPUTED USING INSIDE DIAMETER OF PIPE. NO DEDUCTION HAS BEEN MADE FOR BEVELED EDGES.
2. WHERE HEADWALLS ARE LOCATED AT THE EDGE OF THE SHOULDER, THE TOP OF THE HEADWALLS SHALL BE PARALLEL TO THE EDGE OF SHOULDER.
3. WHERE A RAISED HEADWALL IS USED ON THE OUTLET END OF THE PIPE, THE TOPS OF BOTH WALLS SHALL BE AT THE SAME ELEVATION.
4. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "E" IS GREATER THAN 30°.



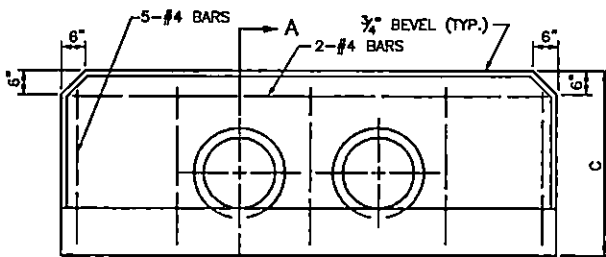
PLAN



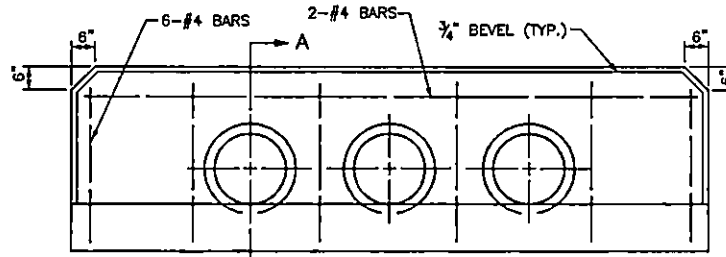
PLAN




SECTION A-A



ELEVATION



ELEVATION





**LEXINGTON**


DIVISION OF ENGINEERING

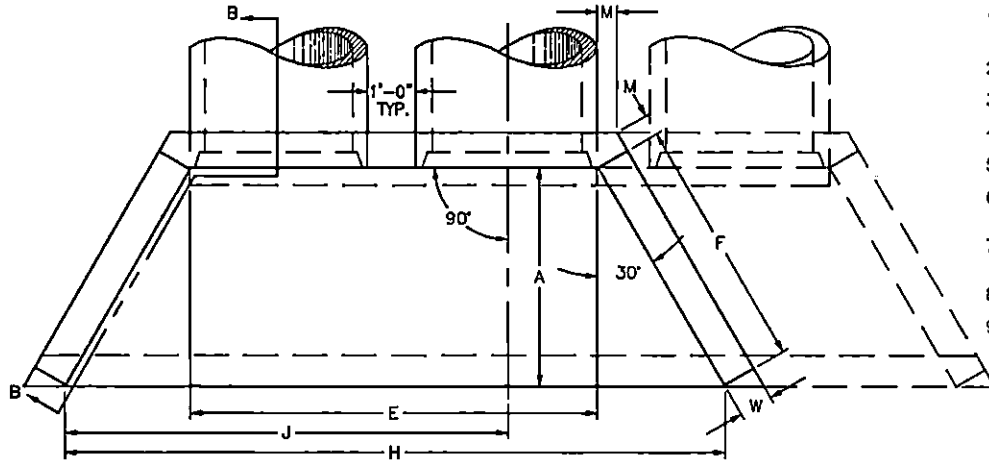
18"-24" DOUBLE & TRIPLE PIPE CULVERT HEADWALLS AT 0° SKEW

STANDARD DRAWING NO. 158

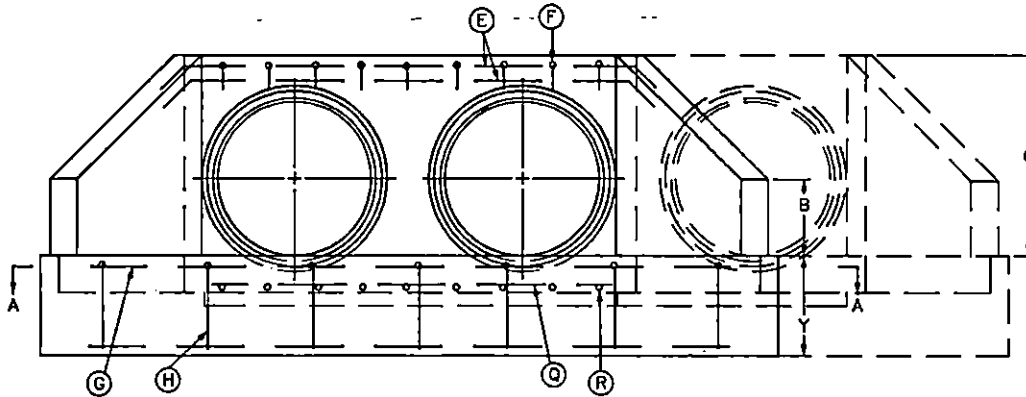
APPROVAL:  9/22/17

URBAN COUNTY ENGINEER  DATE

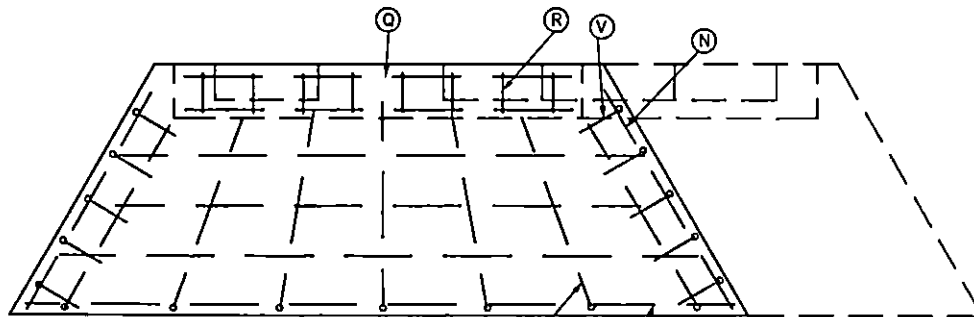
COMMISSIONER  DATE



PLAN VIEW



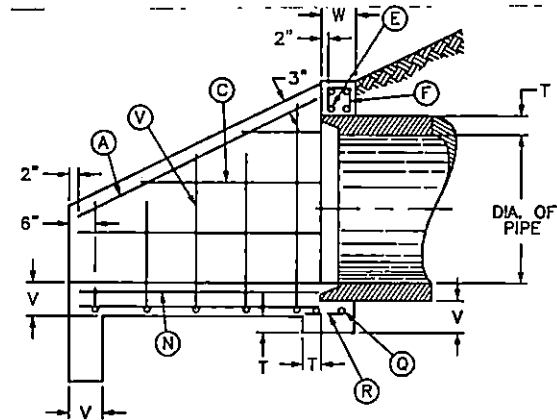
FRONT ELEVATION



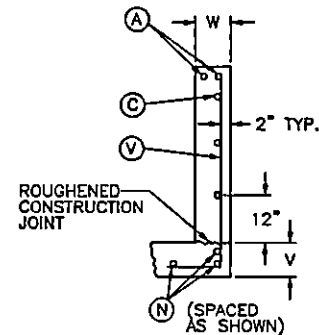
SECTION A-A

**NOTES:**

1. SEE SHEETS 2 AND 3 OF CURRENT STD. DWG. 159 FOR DIMENSIONS, QUANTITIES, AND BILL OF REINFORCEMENT.
2. ENCIRCLED LETTERS, ○, INDICATE STEEL BAR LOCATIONS.
3. BARS ○, ○, ○ ARE SPACED 1'-0" O.C. ALL OTHER BARS SHALL BE EVENLY SPACED.
4. BARS ○ ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE END OF EACH WING.
5. BARS ○ ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE TOP OF EACH WING.
6. HEADWALLS LOCATED AT THE EDGE OF SHOULDER SHALL BE PARALLEL TO CENTERLINE OF THE ROAD.
7. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE. FRONT FACE AND ENDS OF WINGS SHALL REMAIN VERTICAL.
8. DIMENSIONS FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR DISTANCE.
9. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "C" IS GREATER THAN 30". SEE STD. DWG. 308.



SECTION B-B



WING SECTION

SHEET 1 OF 3



**LEXINGTON**

DIVISION OF ENGINEERING

DOUBLE & TRIPLE PIPE  
CULVERT HEADWALLS  
0° SKEW

STANDARD DRAWING NO. 159-1

APPROVAL: *[Signature]* 9/22/17  
URBAN COUNTY ENGINEER DATE  
COMMISSIONER *[Signature]* 9/22/17 DATE

DIMENSIONS FOR MULTIPLE PIPE HEADWALLS - 0° SKEW

DIMENSION	DOUBLE				TRIPLE				DIMENSION
	30"	36"	42"	48"	30"	36"	42"	48"	
A	3'-9"	4'-4"	4'-11"	5'-6"	3'-9"	4'-4"	4'-11"	5'-6"	A
B	1'-3"	1'-6"	1'-9"	2'-0"	1'-3"	1'-6"	1'-9"	2'-0"	B
C	3'-6"	4'-0"	4'-7"	5'-1"	3'-6"	4'-0"	4'-7"	5'-1"	C
E	7'-2"	8'-4"	9'-6"	10'-8"	11'-3"	13'-0"	14'-9"	16'-6"	E
F	4'-4"	5'-0"	5'-8"	6'-4"	4'-4"	5'-0"	5'-8"	6'-4"	F
H	11'-6"	13'-4"	15'-2"	17'-0"	15'-6"	18'-0"	20'-6"	22'-10"	H
J	-	-	-	-	7'-9"	9'-0"	10'-3"	11'-5"	J
M	0'-5"				0'-5"				M
T	0'-3.5"	0'-4"	0'-4.5"	0'-5"	0'-3.5"	0'-4"	0'-4.5"	0'-5"	T
V	0'-8"				0'-8"				V
W	0'-8"				0'-8"				W
Y	2'-0"				2'-0"				Y
CLASS "A" CONC. CU. YDS. 2 HEADWALLS	4.91	6.22	7.75	9.38	6.49	8.20	10.19	12.30	CLASS "A" CONC. CU. YDS. 2 HEADWALLS
LBS. STEEL 2 HEADWALLS	379	480	561	660	475	594	702	797	LBS. STEEL 2 HEADWALLS

SHEET 2 OF 3





**LEXINGTON**

DIVISION OF ENGINEERING

DIMENSIONS AND QUANTITIES  
30"-48"  
DOUBLE & TRIPLE  
HEADWALLS-CIRCULAR PIPE  
0° SKEW

STANDARD DRAWING NO. 159-2

APPROVAL:  9/22/17  
URBAN COUNTY ENGINEER DATE  
COMMISSIONER  9/22/17 DATE

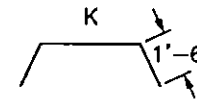
MARK	SIZE	NO				K	MARK	SIZE	NO				K	MARK	SIZE	NO				K								
		①	FT	IN	FT				IN	①	FT	IN				FT	IN	①	FT		IN	FT	IN					
DOUBLE 30"						42"						TRIPLE 30"						42"										
A	5	4	4	8		A	5	4	6	2		A	5	4	4	8		A	5	4	6	2						
C1	4	2	2	4		C1	4	2	2	9		C1	4	2	2	4		C1	4	2	2	9						
C2	4	2	4	2		C2	4	2	4	9		C2	4	2	4	2		C2	4	2	4	9						
E1	5	2	10	6	7	6	E1	5	2	12	10	9	10	E1	5	2	14	7	11	7	E1	5	2	18	1	15	1	
E2	5	2	10	8	7	8	E2	5	2	13	0	10	0	E2	5	2	14	9	11	9	E2	5	2	18	3	15	3	
F	4	8	1	3	0	4	F	4	3	11	5		F	4	12	1	3	0	4	F	4	15	1	3	0	4		
G1	4	2	7	8		G1	4	2	7	8		G1	4	2	11	10		G1	4	2	11	10		G1	4	3	16	8
G2	4	3	10	0		G2	4	3	13	9		G2	4	3	14	1		G2	4	3	14	1		G2	4	3	19	1
H	4	6	5	1	3	5	H	4	7	6	3	4	7	H	4	8	5	1	3	5	H	4	10	6	3	4	7	
N	4	6	4	2		N	4	6	5	6		N	4	6	4	2		N	4	6	4	2		N	4	6	5	6
Q	4	2	7	1		Q	4	2	9	2		Q	4	2	11	1		Q	4	2	11	1		Q	4	2	14	5
R	4	8	0	8		R	4	10	0	9		R	4	2	11	1		R	4	2	11	1		R	4	15	0	9
V1	5	4	3	4	2	1	V1	5	4	3	6	2	3	V1	5	4	3	4	2	1	V1	5	4	3	6	2	3	
V2	5	4	4	4	3	1	V2	5	4	4	4	3	1	V2	5	4	3	-1	-1	10	V2	5	4	4	6	-3	3	
V3	5	4	4	4	1	10	V3	5	4	5	6	4	3	V3	5	4	4	1	2	10	V3	5	4	5	6	4	3	
36"						48"						36"						48"										
A	5	4	5	5		A	5	4	6	11		A	5	4	5	5		A	5	4	6	11						
C1	4	2	1	7		C1	4	2	1	10		C1	4	2	1	7		C1	4	2	1	10						
C2	4	2	3	8		C2	4	2	3	10		C2	4	2	3	8		C2	4	2	3	10						
C3	4	2	4	10		C3	4	2	5	10		C3	4	2	4	10		C3	4	2	5	10						
E1	5	2	11	8	8	8	E1	5	2	6	2		E1	5	2	16	4	13	4	E1	5	2	19	10	16	10		
E2	5	2	11	10	8	10	E2	5	2	14	0	11	0	E2	5	2	16	6	13	6	E2	5	2	20	0	17	10	
F	4	9	1	3	0	4	F	4	11	1	3	0	4	F	4	13	1	3	0	4	F	4	17	1	3	0	4	
G1	4	3	9	7		G1	4	1	11	0		G1	4	3	14	4		G1	4	3	14	4		G1	4	1	16	9
G2	4	3	12	0		G2	4	3	13	3		G2	4	3	16	8		G2	4	3	16	8		G2	4	3	19	0
H	4	7	5	8	4	0	H	4	9	5	8	4	0	H	4	9	5	8	4	0	H	4	12	6	11	5	3	
N	4	6	4	10		N	4	6	4	10		N	4	6	4	10		N	4	6	4	10		N	4	6	6	2
Q	4	2	8	2		Q	4	2	10	4		Q	4	2	12	8		Q	4	2	10	4		Q	4	6	16	2
R	4	9	0	8		R	4	11	0	9		R	4	13	0	8		R	4	13	0	8		R	4	6	6	2
V1	5	4	3	4	2	1	V1	5	4	3	4	2	1	V1	5	4	3	4	2	1	V1	5	4	3	4	2	1	
V2	5	4	4	4	3	1	V2	5	4	4	4	3	1	V2	5	4	4	4	3	1	V2	5	4	4	4	3	1	
V3	5	2	5	4	4	1	V3	5	4	3	9	2	6	V3	5	2	5	4	4	1	V3	5	4	3	9	2	6	
							V2	5	4	4	9	3	6								V2	5	4	4	9	3	6	
							V3	5	4	5	9	4	6								V3	5	4	5	9	4	6	

NOTES:

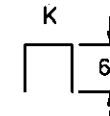
- ① NUMBER OF BARS IN ONE HEADWALL.
- 2. DIMENSIONS ARE OUT TO OUT OF BARS.
- 3. ALL BARS ARE STRAIGHT EXCEPT THOSE SHOWN BELOW.

BENT BAR SHAPES

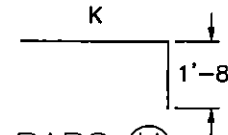
TO BE FIELD BENT



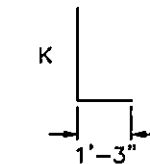
BARS (E)




BARS (F)



BARS (H)



BARS (V)




LEXINGTON


DIVISION OF ENGINEERING


BILL OF REINFORCEMENT  
30"-48" DOUBLE & TRIPLE  
HEADWALLS-CIRCULAR PIPE  
0° SKEW

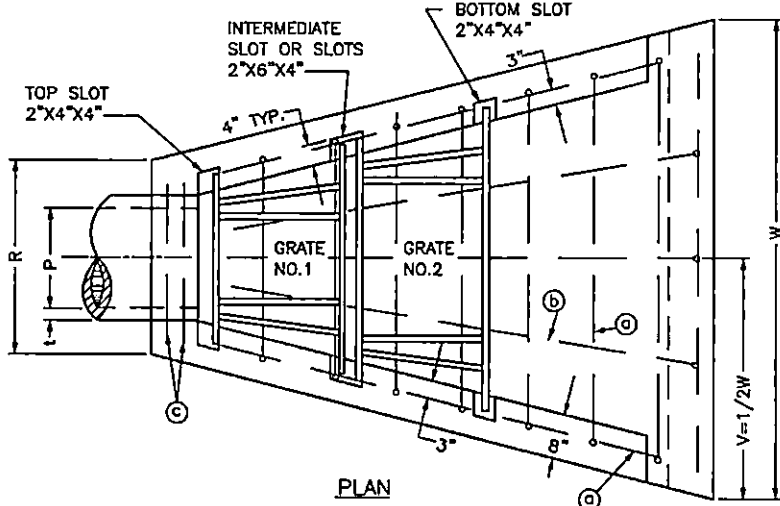
---

STANDARD DRAWING NO. 159-3

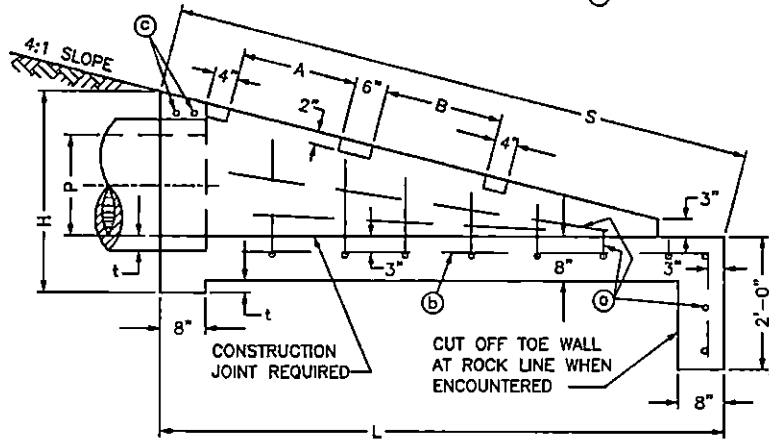
APPROVAL:  9/22/17

URBAN COUNTY ENGINEER  9/22/17

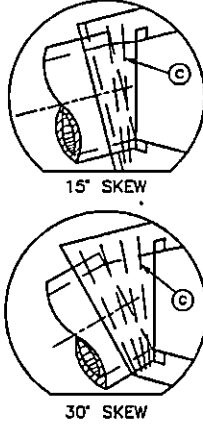
COMMISSIONER  DATE



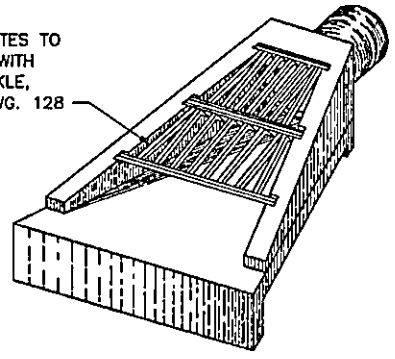
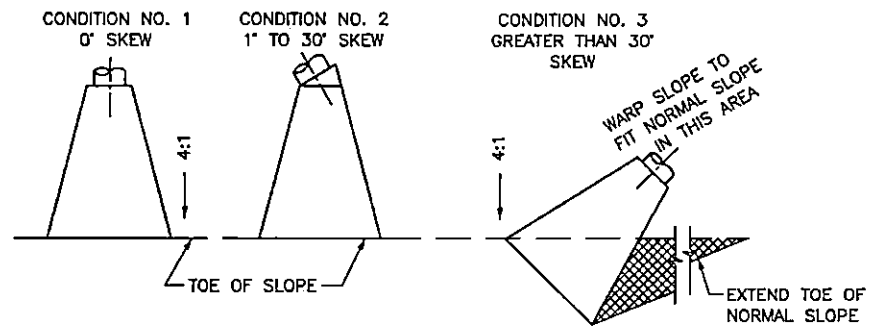
PLAN



ELEVATION



PLAN VIEW OF STRUCTURE LOCATIONS

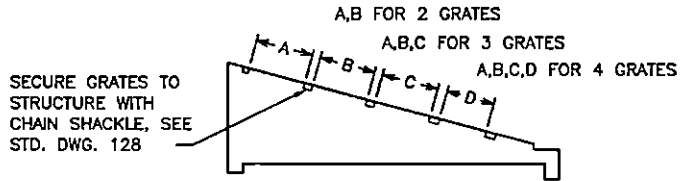


18"-24" TRIMETRIC VIEW

NOTES:

1. THE MINIMUM REQUIREMENT FOR REINFORCING STEEL SHALL BE GRADE 40. FIELD BENDING WILL BE PERMITTED.
- ② ONE ADDITIONAL Ⓞ BAR WILL BE REQUIRED FOR EACH 15° SKEW.
3. t IS CONCRETE PIPE WALL THICKNESS.

DETAIL SHOWING LOCATION OF SLOTS FOR GRATES



SEE STD. DWG. 163 FOR GRATE DETAILS.

DIMENSIONS										
P	H	L	S	R	V	W	A	B	C	D
18"	3'-0"	8'-6"	8'-9 1/8"	2'-11 1/2"	3'-7 1/2"	7'-3"	1'-9"	1'-9"	-	-
24"	3'-7"	10'-8"	11'-0"	3'-6 1/2"	4'-5 1/2"	8'-11"	2'-9"	2'-9"	-	-
30"	4'-2"	12'-10"	13'-2 3/4"	4'-1 1/2"	5'-3 1/2"	10'-7"	2'-9"	2'-9"	1'-9"	-
36"	4'-9"	15'-0"	15'-5 1/2"	4'-8 1/2"	6'-1 1/2"	12'-3"	2'-9"	2'-9"	1'-9"	1'-9"

NO. OF GRATES REQ'D	
2'	3'
2	-
-	2
1	2
2	2

NO. 4 REINFORCEMENT BARS				CLASS "A" CONG.
NUMBER-LENGTH AND WEIGHT				
Ⓞ	Ⓛ	②	Ⓞ	LBS
14 AT 6'-5"	3 AT 8'-6"	2 AT 2'-8"		81 1.8
16 AT 8'-0"	3 AT 10'-6"	2 AT 3'-3"		111 2.7
18 AT 9'-7"	3 AT 12'-9"	2 AT 3'-10"		146 3.8
20 AT 11'-4"	3 AT 15'-0"	2 AT 4'-5"		187 5.1

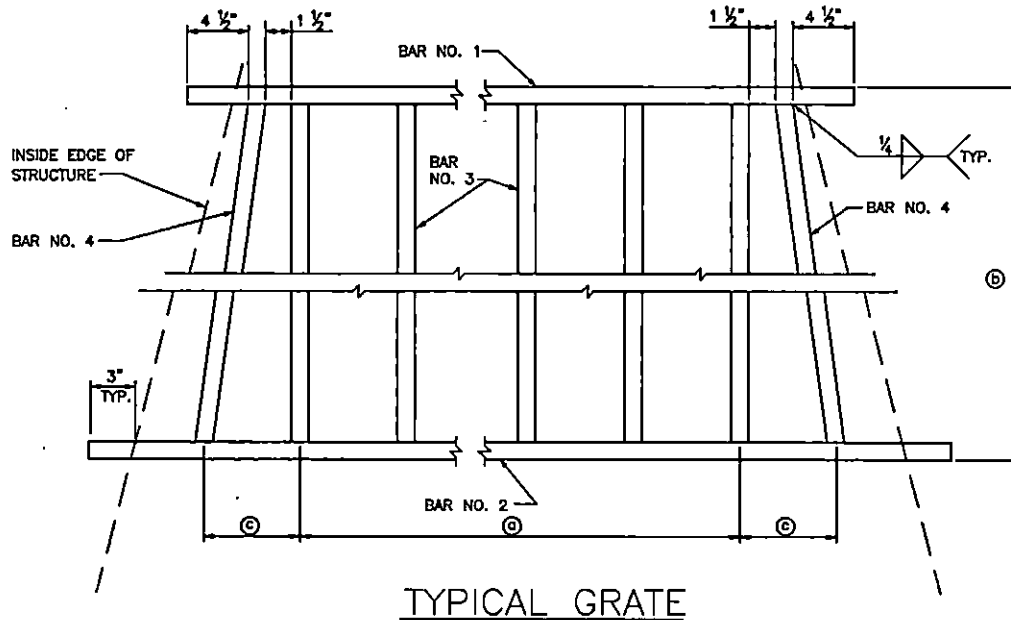


DIVISION OF ENGINEERING

SLOPED AND FLARED BOX INLET-OUTLET  
18"-24"-30"-36"  
ALL SKEWS

STANDARD DRAWING NO. 162  
APPROVAL: [Signature] 9/22/17  
URBAN COUNTY ENGINEER [Signature] DATE 9/22/17  
COMMISSIONER [Signature] DATE


BOX INLET-OUTLET SIZE	GRATE		BAR NO. 1	BAR NO. 2	BAR NO. 3	BAR NO. 4	LBS. STRUCTURAL STEEL		
	NO.	SIZE	LENGTH	LENGTH	NO. BARS	LENGTH	EACH GRATE	TOTAL	
18"	1	2'-0"	2'-6 1/2"	3'-5 3/8"	4	1'-10"	1'-10 1/4"	116	272
	2	2'-0"	3'-7 5/8"	4'-6 7/8"	6	1'-10"	1'-10 1/4"	156	
24"	1	3'-0"	3'-1 1/2"	4'-6 5/8"	5	2'-10"	2'-10 3/8"	187	454
	2	3'-0"	4'-8 1/2"	6'-1 5/8"	8	2'-10"	2'-10 3/8"	267	
30"	1	3'-0"	3'-8 1/2"	5'-1 1/2"	6	2'-10"	2'-10 3/8"	215	796
	2	3'-0"	5'-3 1/2"	6'-8 5/8"	9	2'-10"	2'-10 3/8"	294	
	3	2'-0"	6'-10 1/2"	7'-9 3/4"	13	1'-10"	1'-10 1/4"	287	
36"	1	3'-0"	4'-3 1/2"	5'-8 1/2"	7	2'-10"	2'-10 3/8"	242	1218
	2	3'-0"	5'-10 1/2"	7'-3 5/8"	10	2'-10"	2'-10 3/8"	321	
	3	2'-0"	7'-5 1/2"	8'-4 3/4"	14	1'-10"	1'-10 1/4"	308	
	4	2'-0"	8'-6 3/4"	9'-5 7/8"	16	1'-10"	1'-10 1/4"	347	



TYPICAL GRATE

NOTES:

- Ⓒ EQUALLY SPACE BARS NO. 3.
- Ⓓ SIZE OF GRATE EITHER 2'-0" OR 3'-0".
- Ⓔ 5 1/2" FOR 2'-0" GRATE, 7" FOR 3'-0" GRATE.
- 1. ALL COMPONENTS ARE 1" x 2" STRUCTURAL STEEL BARS.
- 2. SEE STD. DWG. 162.
- 3. SECURE GRATE TO STRUCTURE WITH CHAIN SHACKLE, SEE STD. DWG. 128.





**LEXINGTON**


DIVISION OF ENGINEERING

GRATES FOR SLOPED AND FLARED BOX INLET-OUTLET

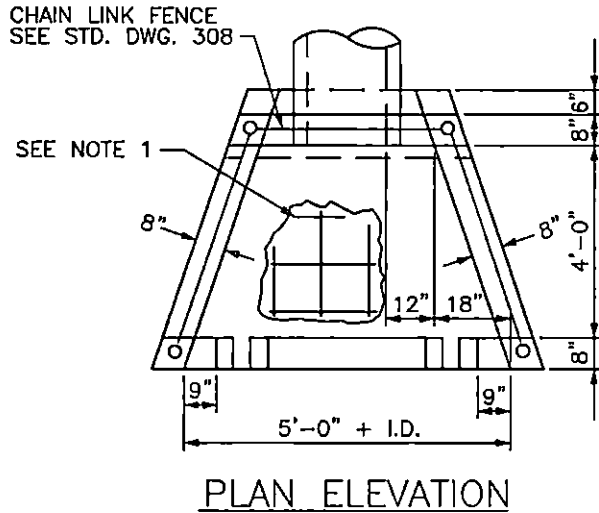
STANDARD DRAWING NO. 163

APPROVAL:  9/22/17

URBAN COUNTY ENGINEER  9/22/17

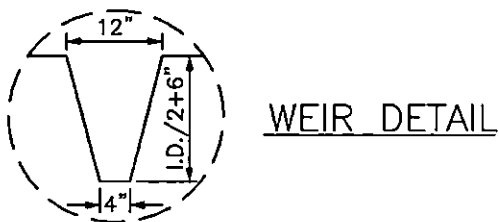
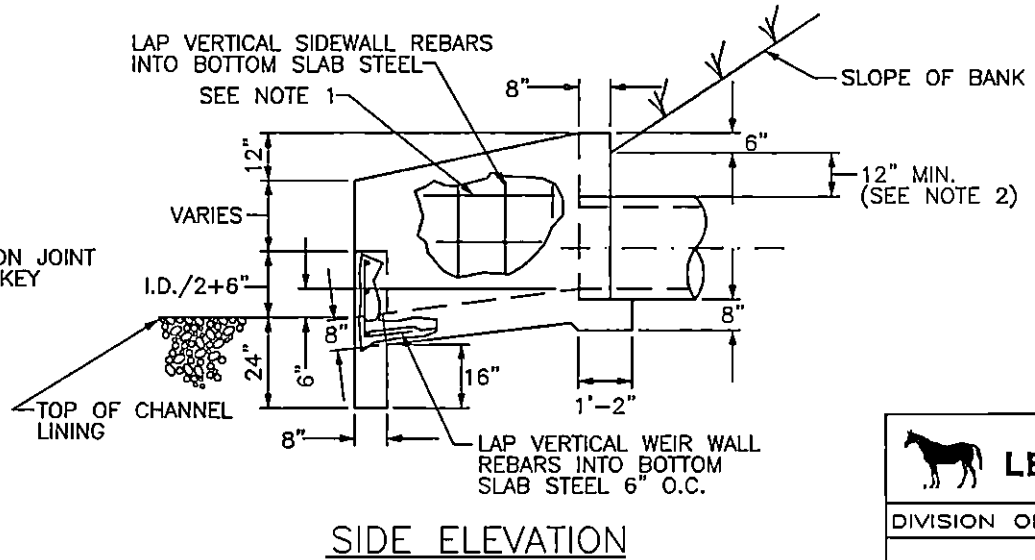
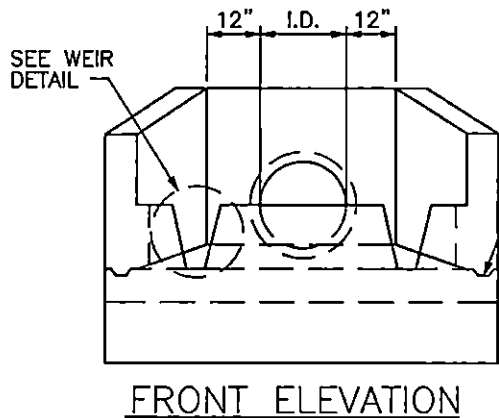
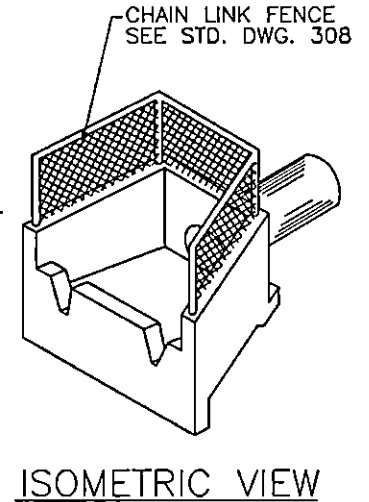
COMMISSIONER  DATE




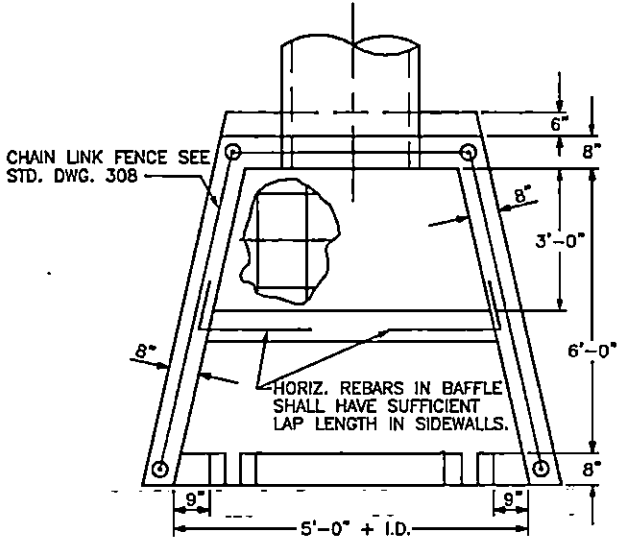


NOTES:

1. NO. 5 STEEL BARS TO BE USED THROUGHOUT ON 12" CENTERS.
2. HEIGHT OF WALL SHALL BE DETERMINED BY THE AMOUNT OF FILL BEHIND PIPE. TOP OF WALL SHALL BE 18" ABOVE TOP O.D. OF PIPE.
3. TOP OF END SILL SHALL BE LEVEL WITH CENTERLINE OF PIPE.
4. CHANNEL LINING TO BE WIDTH OF END SILL, 18" MINIMUM THICKNESS, AND COMPOSED OF CLASS III CHANNEL LINING.
5. ALL VERTICAL OR SLOPED EXPOSED SURFACES SHALL HAVE A RUBBED FINISH.
6. ALL EXPOSED FLAT WORK TO HAVE A HAND FLOATED AND BROOMED FINISH.
7. ALL EXPOSED EDGES SHALL HAVE A 3/4" CHAMFER.
8. ALL STEEL SHALL HAVE 2" MINIMUM CLEARANCE TO THE CONCRETE FACE ON THE BACKFILL SIDE OF THE WALLS.
9. FENCES REQUIRED ON HEADWALLS.



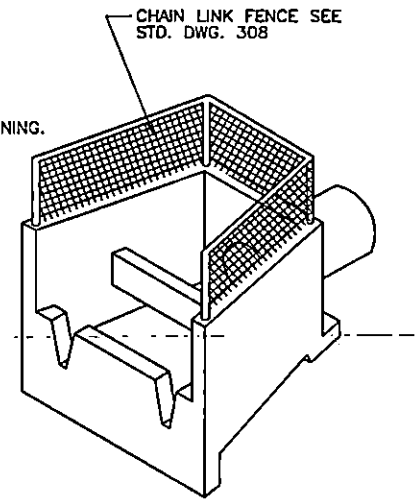
 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
IMPACT STILLING BASIN 15"-24" PIPES	
STANDARD DRAWING NO.	164
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17 DATE



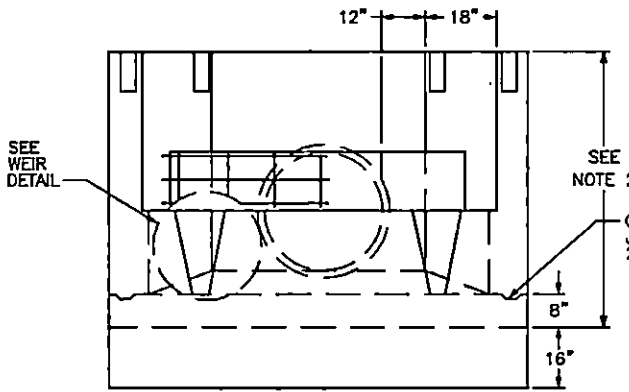
PLAN ELEVATION

**NOTES:**

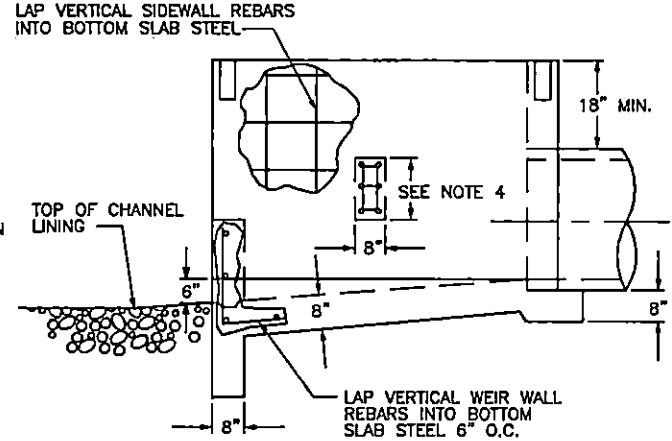
1. NO. 5 STEEL BARS SHALL BE USED THROUGHOUT ON 12" CENTERS EXCEPT ON BAFFLE WHERE HORIZONTAL AND VERTICAL STEEL WILL BE ON 6" CENTERS.
2. HEIGHT OF WALL SHALL BE DETERMINED BY THE AMOUNT OF FILL BEHIND PIPE. TOP OF WALL SHALL BE 18" ABOVE TOP O.D. OF PIPE.
3. TOP OF END SILL SHALL BE LEVEL WITH CENTERLINE OF PIPE.
4. TOP OF BAFFLE SHALL BE LEVEL WITH CROWN OF PIPE, AND THE BOTTOM SHALL BE LEVEL WITH CENTERLINE OF PIPE.
5. CHANNEL LINING TO BE 2 TIMES THE WIDTH OF THE END SILL AND EXTEND A MINIMUM OF 4' BEYOND THE STILLING BASIN WITH AN 18" MINIMUM THICKNESS AND COMPOSED OF CLASS III CHANNEL LINING.
6. CHANNEL LINE SPILL SLOPES BEYOND SIDES OF HEADWALL WITH CLASS III CHANNEL LINING. CHANNEL LINING SHALL EXTEND 4' IN WIDTH ON SLOPES AT WINGWALL AND TO DOWNSTREAM END OF CHANNEL.
7. ALL VERTICAL OR SLOPED EXPOSED SURFACES SHALL HAVE A RUBBED FINISH.
8. ALL EXPOSED FLATWORK SHALL HAVE A HANDFLOATED AND BROOMED FINISH.
9. ALL EXPOSED EDGES SHALL HAVE A 3/4" CHAMFER.
10. ALL STEEL SHALL HAVE A 2" MINIMUM CLEARANCE TO THE CONCRETE FACE ON THE BACKFILL SIDE OF THE STRUCTURE.
11. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN THE VERTICAL FACE IS GREATER THAN 30".
12. ALL LARGER PIPES SHALL HAVE A SPECIAL DESIGN STILLING BASIN.
13. ALL LONGITUDINAL REINFORCING BARS IN BAFFLE SHALL HAVE SUFFICIENT ANCHORAGE LENGTH IN SIDEWALLS.



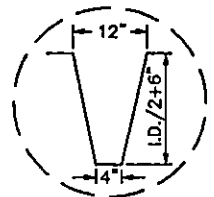
ISOMETRIC VIEW




FRONT ELEVATION

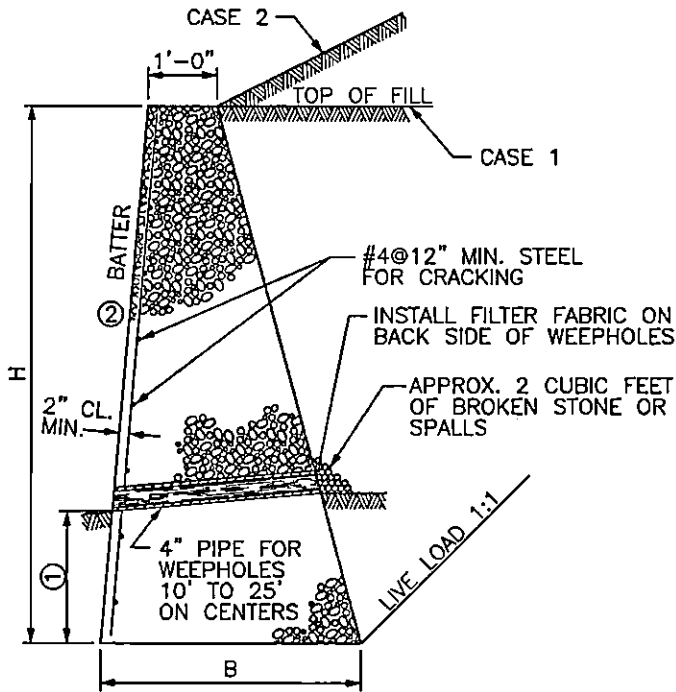


SIDE ELEVATION



WEIR DETAIL

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
IMPACT STILLING BASIN 27"-48" PIPES	
STANDARD DRAWING NO.	165
APPROVALS	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17 DATE



RETAINING WALL

H	B	END AREA SQ. FT.	VOLUME C.Y./L.F.
CASE 1 OR 2			
2'-6"	1'-3"	2.8125	0.1042
3'-0"	1'-6"	3.7500	0.1389
3'-6"	1'-9"	4.8125	0.1782
4'-0"	2'-0"	6.0000	0.2222
4'-6"	2'-3"	7.3125	0.2708
5'-0"	2'-6"	8.7500	0.3241
5'-6"	2'-9"	10.3125	0.3819
6'-0"	3'-0"	12.0000	0.4444
6'-6"	3'-3"	13.8125	0.5116
7'-0"	3'-6"	15.7500	0.5833
7'-6"	3'-9"	17.8125	0.6597
8'-0"	4'-0"	20.0000	0.7407
8'-6"	4'-3"	22.3125	0.8264
9'-0"	4'-6"	24.7500	0.9167
9'-6"	4'-9"	27.3125	1.0116
CASE 1			
10'-0"	5'-0"	30.0000	1.1111
10'-6"	5'-3"	32.8125	1.2153
11'-0"	5'-6"	35.7500	1.3241
11'-6"	5'-9"	38.8125	1.4375
12'-0"	6'-0"	42.0000	1.5556
CASE 2			
10'-0"	6'-0"	35.0000	1.2963
10'-6"	6'-3"	38.0625	1.4097
11'-0"	6'-6"	41.2500	1.5278
11'-6"	6'-9"	44.5625	1.6505
12'-0"	7'-0"	48.0000	1.7778

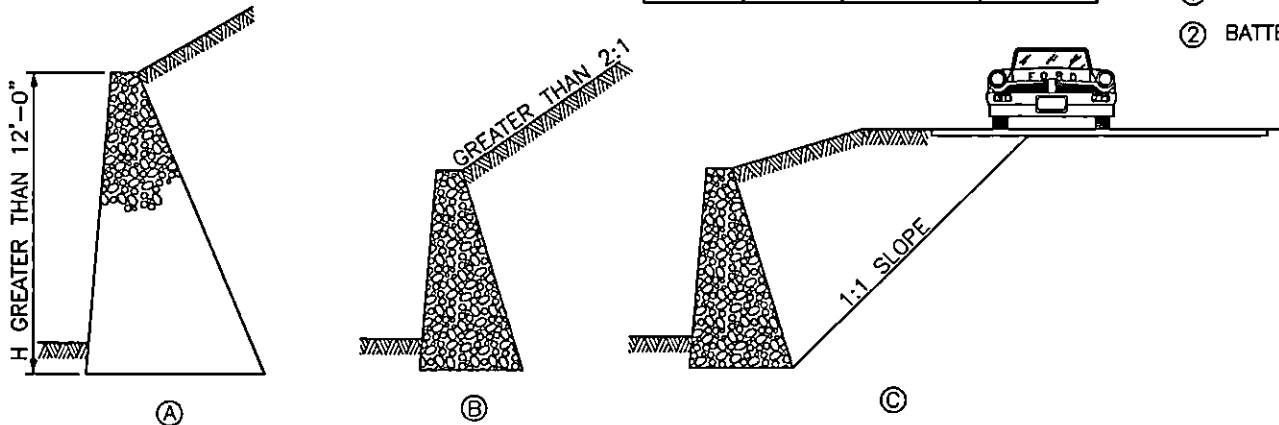
NOTES:

- THE RETAINING WALL DEPICTED ON THIS DRAWING SHALL BE USED WHEN THE HEIGHT ("H" DIMENSION) OF THE WALL IS 2'-6" TO 12'-0" PROVIDED THE FILL COMPLIES WITH THE FOLLOWING CONDITIONS:  
 CASE 1 - TOP OF FILL IS LEVEL WITH TOP OF WALL.  
 CASE 2 - WALL IS SURCHARGED WITH DEAD LOAD FILL SLOPES OF 2:1 OR LESS.
- AREAS AND VOLUMES HAVE BEEN COMPUTED WITHOUT DEDUCTING FOR BEVELED EDGES OR PIPE DRAINS. WHEN A RETAINING WALL VARIES IN HEIGHT, THE PRISMOIDAL FORMULA SHALL BE USED IN COMPUTING VOLUMES.
- GRAVITY TYPE RETAINING WALLS SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE.
- TRANSVERSE EXPANSION JOINTS 1/2 INCH IN WIDTH SHALL BE PLACED AT INTERVALS OF NOT OVER 30 FEET THROUGHOUT THE LENGTH OF RETAINING WALLS AND EXPANSION JOINT MATERIAL SHALL BE PLACED THEREIN. ALL EXPOSED EDGES SHALL BE BEVELED 3/4 INCH. THE WALLS SHALL NOT BE SURCHARGED EXCEPT IN SPECIAL CASES WHEREIN SPECIAL DRAWINGS WILL BE FURNISHED.


SHEET NOTES: ○

SPECIAL DESIGNS SHALL BE REQUIRED WHEN ANY ONE OF THE FOLLOWING CONDITIONS EXIST:

- A WALL HEIGHT IS GREATER THAN 12'-0" (CASE 1 OR CASE 2 FILL).
- B WALL IS SURCHARGED WITH DEAD LOAD FILL SLOPES GREATER THAN 2:1.
- C WALL IS SURCHARGED WITH A LIVE LOAD WITHIN THE LIMITS OF A 1:1 SLOPE EXTENDING FROM THE BASE OF THE WALL.
- 1 MINIMUM VALUE FOR FIRM SOIL IS 2'-0".
- 2 BATTER: H=3'-0" TO LESS THAN 5'-0" (VERTICAL)  
 H=5'-0" TO LESS THAN 10'-0" (1":1)  
 H=10'-0" TO 12'-0" (2":1)



SPECIAL DESIGNS REQUIRED




LEXINGTON


DIVISION OF ENGINEERING

RETAINING WALL  
GRAVITY TYPE

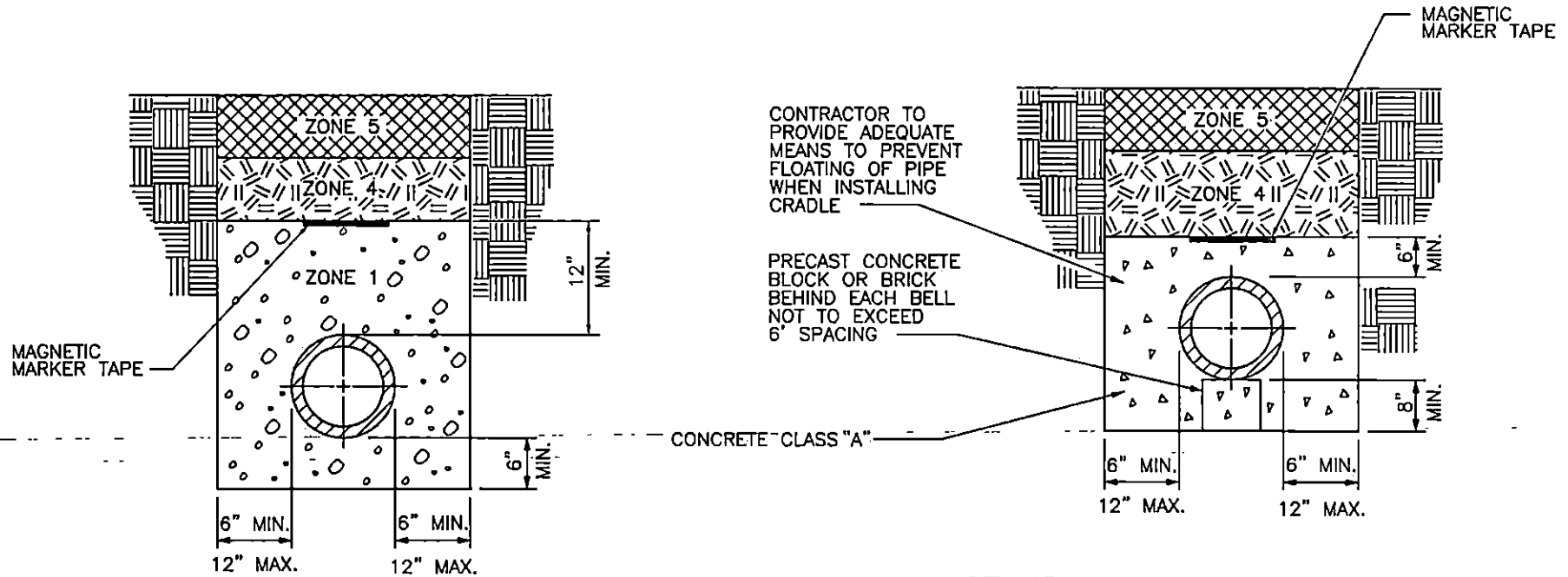
---

STANDARD DRAWING NO. 180

APPROVAL:  9/22/17

URBAN COUNTY ENGINEER  9/22/17

COMMISSIONER DATE




PIPE LAID IN ROCK  
OR SOIL TRENCH

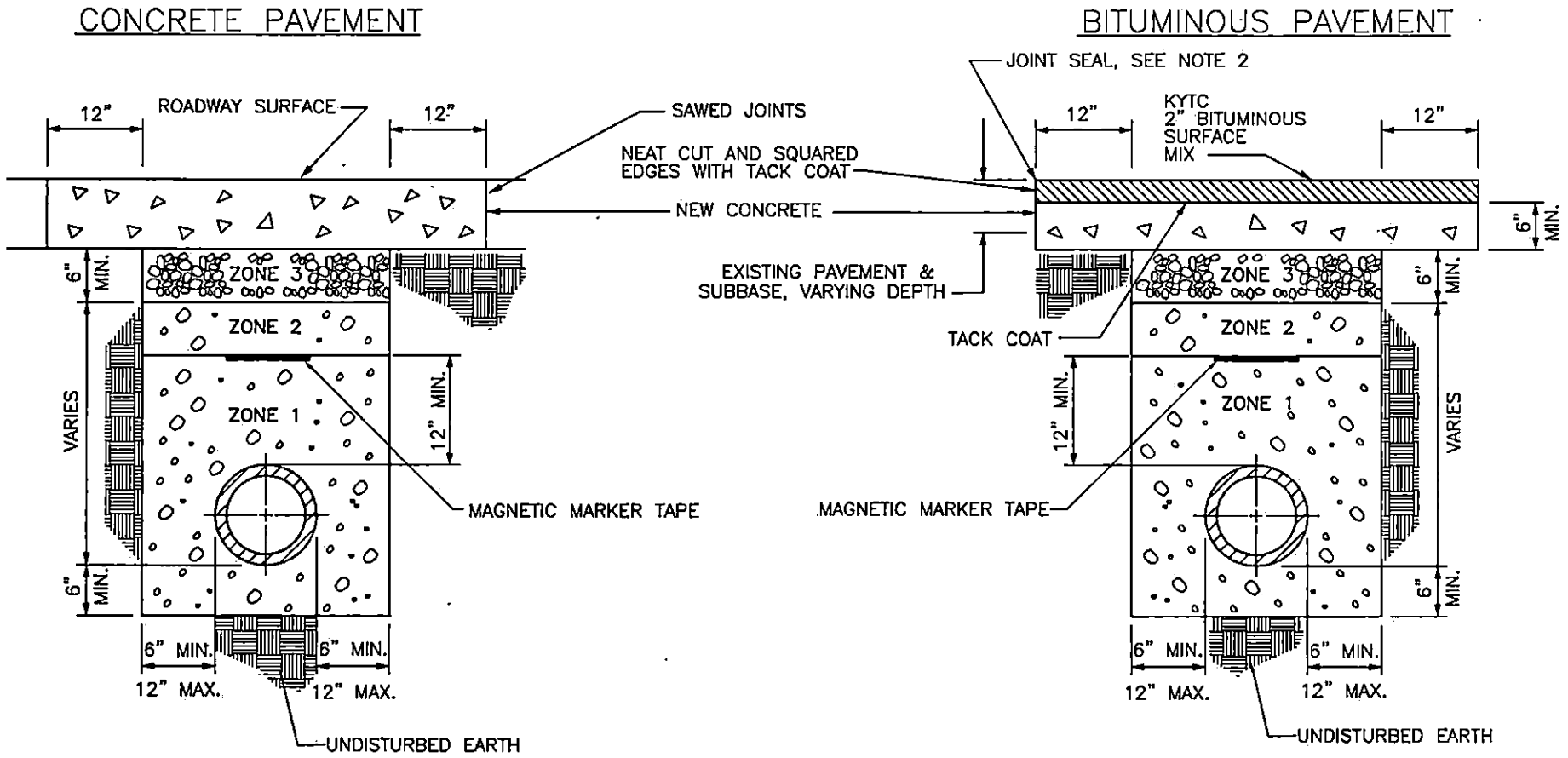
STANDARD CONCRETE ENCASEMENT  
(NOTE: AS REQUIRED BY DESIGN)

PIPE BACKFILL DESCRIPTIONS	
ZONE 1	NO. 9 STONE
ZONE 2	NO. 9 OR NO. 57 STONE
ZONE 3	COMPACTED DGA
ZONE 4	CONSOLIDATED SOIL, (NO ROCK GREATER THAN 6" DIAMETER) NO. 9, OR NO. 57 STONE
ZONE 5	12" MAX. TOPSOIL NO ROCK ALLOWED

NOTES:

1. COVER, UP TO AND INCLUDING ZONE 4 SHALL BE ESTABLISHED BEFORE TRENCH EXCAVATION.
2. ALL SANITARY SEWER LINES CONSTRUCTED FROM NON-METALLIC MATERIALS SHALL HAVE MAGNETIC MARKER TAPE INSTALLED IN THE TRENCH ABOVE THE SANITARY SEWER LINE.
3. MAGNETIC MARKER TAPE FOR SANITARY SEWER ONLY.

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
TRENCHING, LAYING, BACKFILLING AND BEDDING OUTSIDE R/W LIMITS	
STANDARD DRAWING NO.	200
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



**NOTES:**

1. REPLACE CONCRETE PAVEMENT WITH NEW CONCRETE PAVEMENT, 6" MINIMUM OR EXISTING THICKNESS, WHICHEVER IS GREATER.
2. SEAL PERIMETER OF CUT PAVEMENT WITH CRACK SEALANT THAT MEETS ASTM D6690, TYPE 2.
3. MAGNETIC MARKER TAPE FOR SANITARY SEWER ONLY.

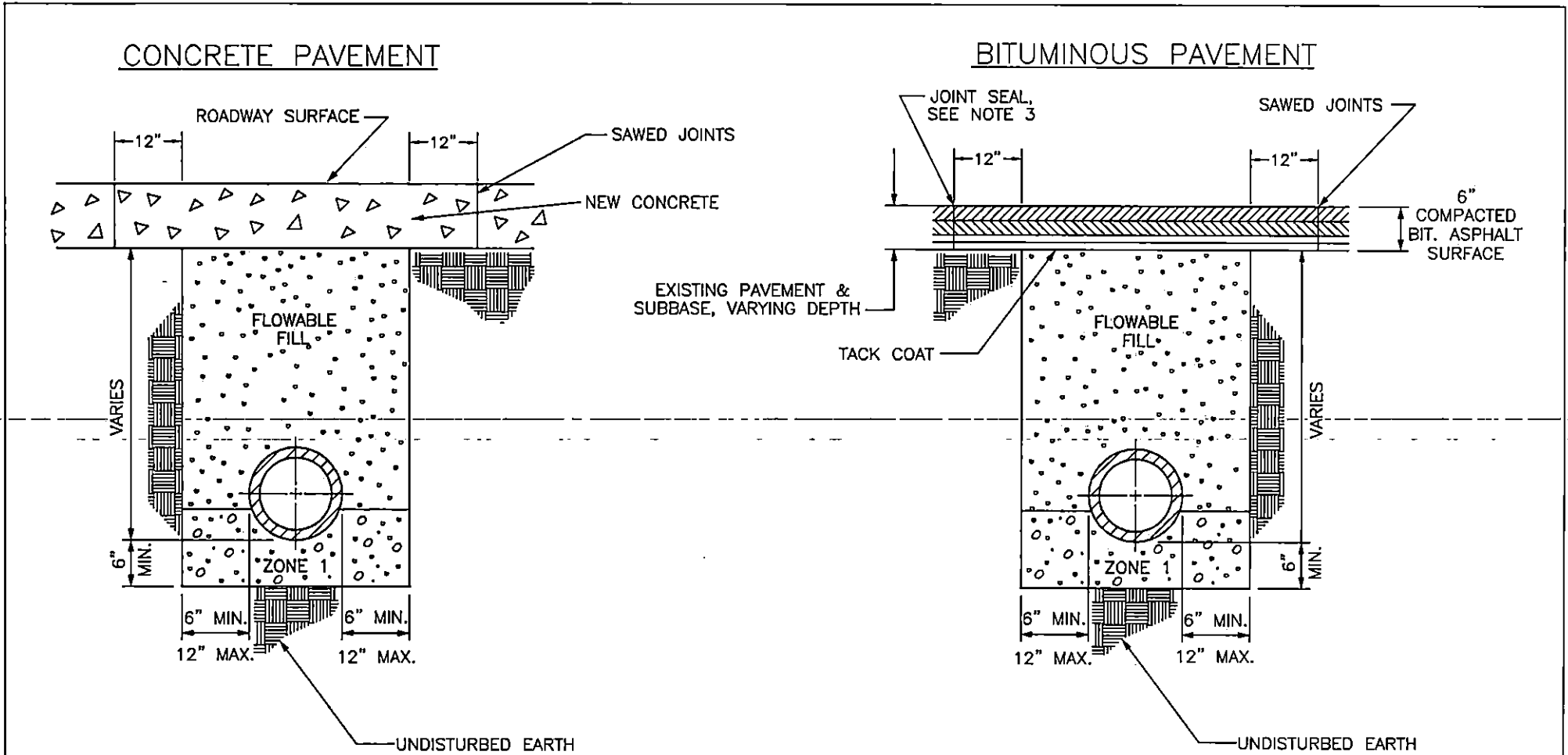
PIPE BACKFILL DESCRIPTIONS	
ZONE 1	NO. 9 STONE
ZONE 2	NO. 9 OR NO. 57 STONE
ZONE 3	COMPACTED DGA
ZONE 4	CONSOLIDATED SOIL, (NO ROCK GREATER THAN 6" DIAMETER), NO. 9, OR NO. 57 STONE
ZONE 5	12" MAX. TOPSOIL, NO ROCK ALLOWED

LEXINGTON

DIVISION OF ENGINEERING

TRENCHING, LAYING,  
BACKFILLING AND BEDDING  
UNDER STREET PAVEMENT


STANDARD DRAWING NO.	201-1
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



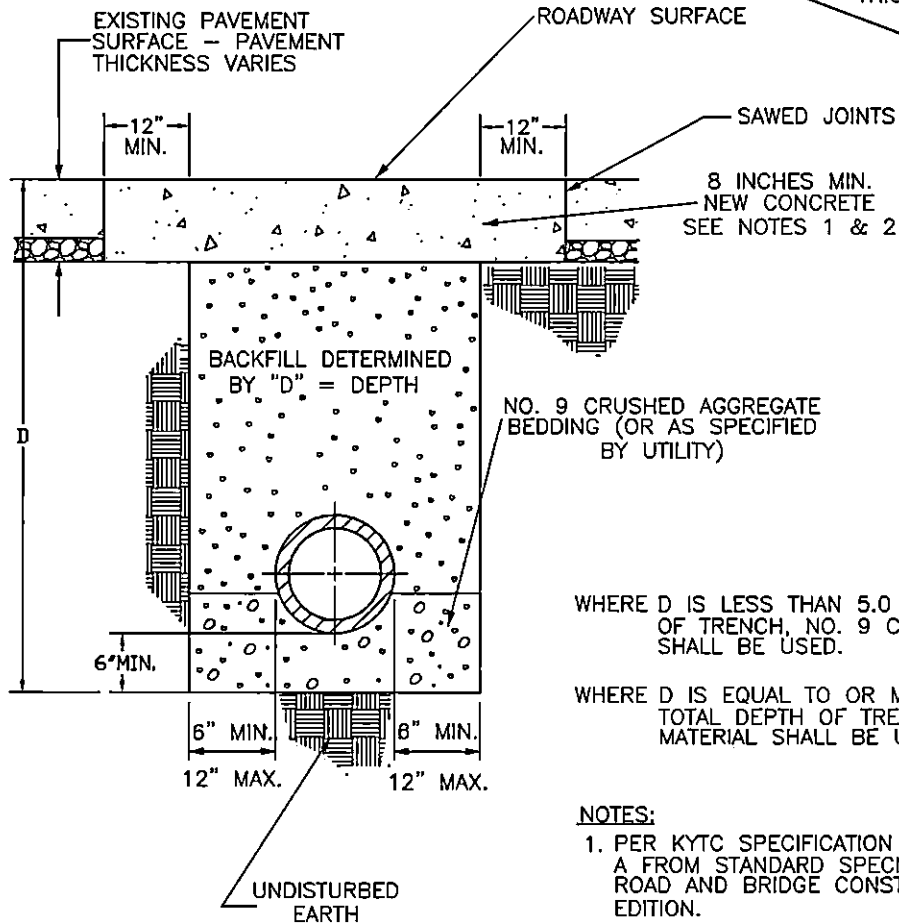
PIPE BACKFILL DESCRIPTIONS	
ZONE 1	NO. 9 STONE
ZONE 2	NO. 9 OR NO. 57 STONE
ZONE 3	COMPACTED DGA
ZONE 4	CONSOLIDATED SOIL, (NO ROCK GREATER THAN 6" DIAMETER), NO. 9, OR NO. 57 STONE
ZONE 5	12" MAX. TOPSOIL, NO ROCK ALLOWED

**NOTES:**

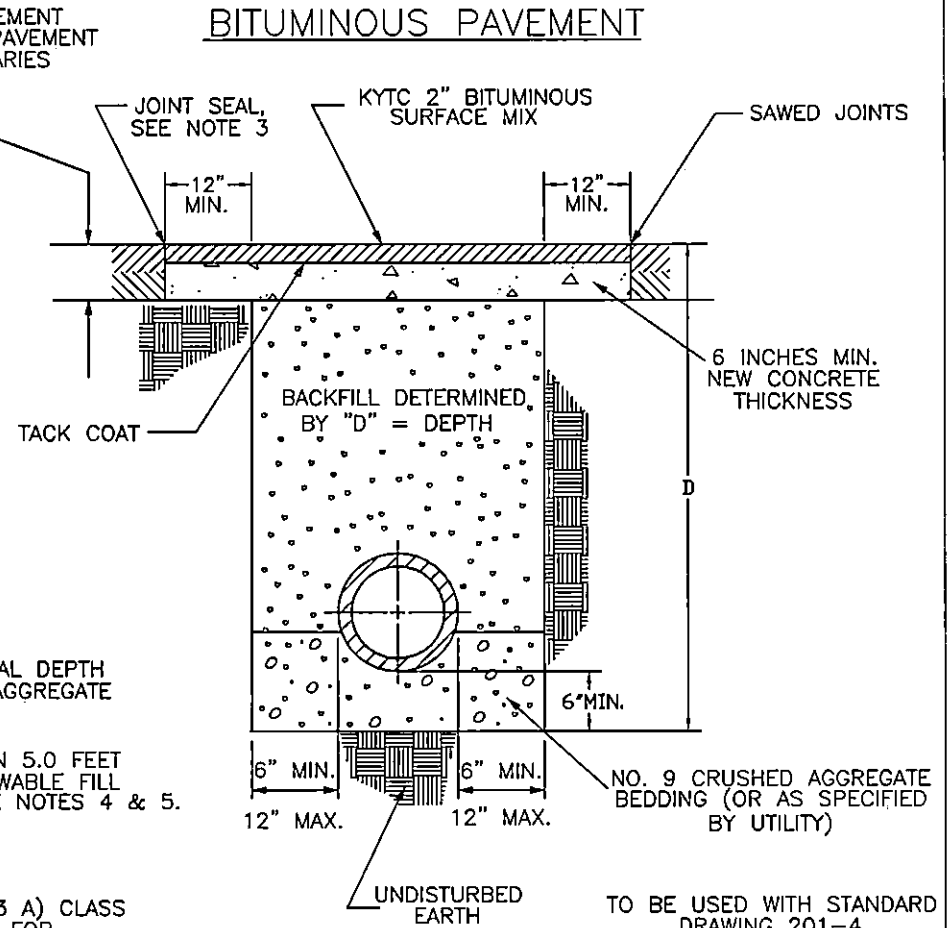
1. FLOWABLE FILL PER KYTC SPECIFICATION 601.03.03 FROM STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION CURRENT EDITION.
2. REPLACE CONCRETE PAVEMENT WITH NEW CONCRETE PAVEMENT, 6" MINIMUM OR EXISTING THICKNESS, WHICHEVER IS GREATER.
3. SEAL PERIMETER OF CUT PAVEMENT WITH CRACK SEALANT THAT MEETS ASTM D6690, TYPE 2.

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
TRENCHING, LAYING, BACKFILLING, AND BEDDING UNDER STREET PAVEMENT USING FLOWABLE FILL	
STANDARD DRAWING NO.	201-2
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

### CONCRETE PAVEMENT



### BITUMINOUS PAVEMENT



WHERE D IS LESS THAN 5.0 FEET TOTAL DEPTH OF TRENCH, NO. 9 CRUSHED AGGREGATE SHALL BE USED.

WHERE D IS EQUAL TO OR MORE THAN 5.0 FEET TOTAL DEPTH OF TRENCH, FLOWABLE FILL MATERIAL SHALL BE USED. SEE NOTES 4 & 5.

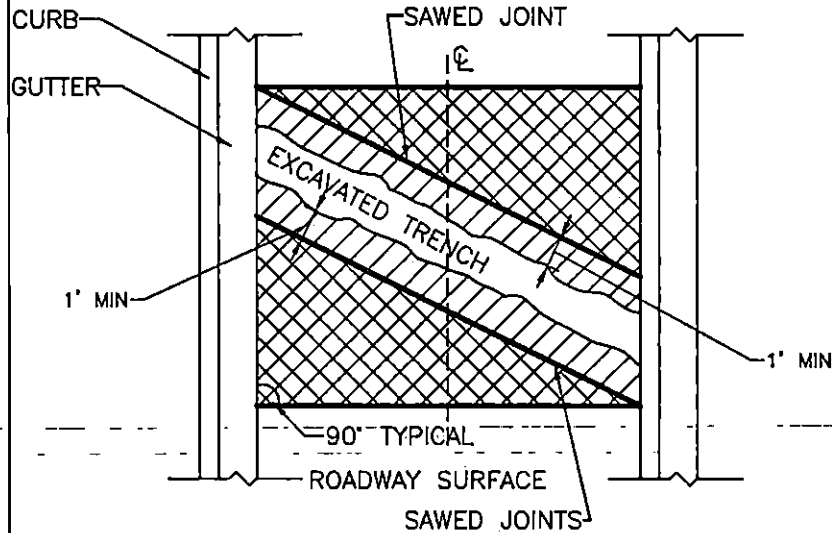
**NOTES:**

1. PER KYTC SPECIFICATION 601.03.03 A) CLASS A FROM STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION.
2. REPLACE CONCRETE PAVEMENT WITH NEW CONCRETE PAVEMENT.
3. SEAL PERIMETER OF CUT PAVEMENT WITH CRACK SEALANT THAT MEETS ASTM D6690, TYPE 2.
4. FLOWABLE FILL TO BE PROPORTIONED PER KYTC SPECIFICATION 601.03.03 B) 5) FROM STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION.
5. UTILITY DESIGNERS AND CONTRACTORS SHALL ACCOUNT FOR AND PROVIDE ANY SUITABLE MEANS TO PREVENT PIPE/CONDUIT FLOATION.

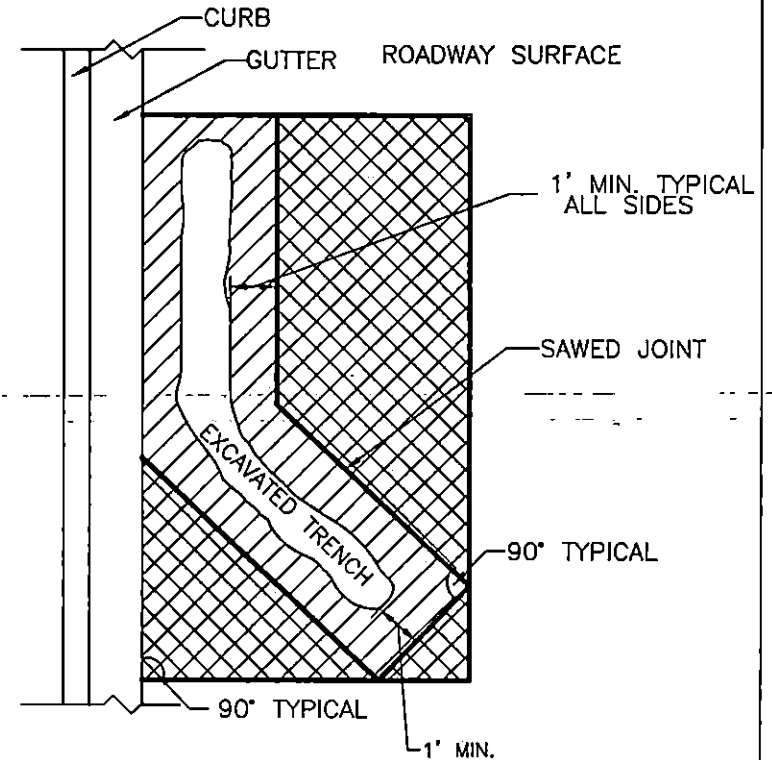
TO BE USED WITH STANDARD DRAWING 201-4

<b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
UTILITY TRENCH RESTORATION BENEATH EXISTING PAVED ROADS (SECTION VIEW)	
STANDARD DRAWING NO.	201-3
APPROVAL:	DATE: 9/22/17
URBAN COUNTY ENGINEER: <i>[Signature]</i>	DATE: 9/22/17
COMMISSIONER	DATE

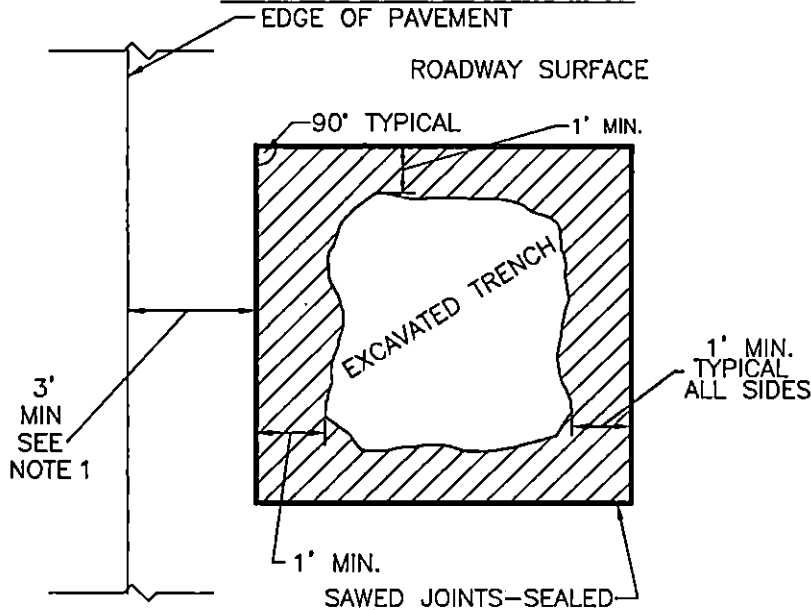
### TRANSVERSE EXCAVATION



### LONGITUDINAL EXCAVATION – ADJACENT TO CURB OR GUTTER

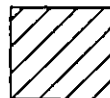


### ISOLATED EXCAVATION

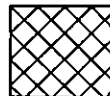


**NOTES:**

1. WHEN LESS THAN 3', THEN THE PAVEMENT SHALL BE REMOVED TO THE EDGE OF PAVEMENT AND REPLACED PER STANDARD DRAWING 201-3.
2. STREET CUT SHALL BE ORIENTED EITHER PARALLEL OR PERPENDICULAR TO CURB OR GUTTER.
3. ALL SAWED JOINTS SHALL PRODUCE NEAT CUTS WITH SQUARED EDGES.



AREA SHALL BE EXCAVATED TO 8" BELOW ROADWAY SURFACE, THEN REPLACED PER STANDARD DRAWING 201-3.



AREA SHALL BE MILLED 2" AND REPLACED WITH 2" BITUMINOUS SURFACE MIX.

TO BE USED WITH STANDARD DRAWING, 201-3



**LEXINGTON**

DIVISION OF ENGINEERING

UTILITY TRENCH RESTORATION BENEATH EXISTING PAVED ROADS (PLAN VIEW)

STANDARD DRAWING NO.	201-4
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



TABLE OF:  
**MAXIMUM ALLOWABLE FILL HEIGHTS**  
 (LIVE LOAD NOT INCLUDED)

DIAMETER (INCHES)	DUCTILE IRON PIPE	POLYVINYL CHLORIDE (PVC) PIPE	
	CLASS 50 *	SDR-35	SDR-26 HEAVY WALL
	MAXIMUM DEPTH OF COVER (FEET)	MAXIMUM DEPTH OF COVER (FEET)	MAXIMUM DEPTH OF COVER (FEET)
4	—	—	—
6	20	15	—
8	20	15	—
10	20	15	—
12	20	15	—
14	20	—	—
15	—	15	—
16	20	—	—
18	20	—	20
20	18	—	—
21	—	—	20
24	17	—	20
27	—	—	20
30	14	—	—
36	14	—	—
42	13	—	—
48	13	—	—

\* LIGHTEST CLASS OF DUCTILE IRON PIPE

**NOTES:**

1. DEPTH IS BASED ON LAYING CONDITION UTILIZING NO. 9 STONE ENCASING PIPE FROM 6" MINIMUM BELOW PIPE TO A PLANE, LEVEL WITH THE TOP OF THE PIPE AND 6" TO 12" NO. 9 STONE TO EDGE OF TRENCH.
2. WEIGHT OF SOIL AND ROCK COVER MIX IS ASSUMED TO BE APPROXIMATELY 120 LB./CU. FT.
3. DUCTILE IRON PIPE HAS FLEXIBLE LINING.
4. DESIGN ENGINEERS SHOULD USE THIS STANDARD DRAWING FOR GENERAL GUIDELINES AND SHOULD CHECK THEIR DESIGN FOR SAFE, NON-DESTRUCTIVE FILL HEIGHTS FOR ACTUAL BRAND OF PIPE PROPOSED.
5. SPECIAL TRENCHING DETAILS AND PROCEDURES SHOULD BE USED WHERE FILL DEPTHS ARE HIGHER THAN THOSE SHOWN IN TABLE.
6. INSTALLATIONS REQUIRING A DEPTH GREATER THAN 20', MUST BE APPROVED BY THE ENGINEER.



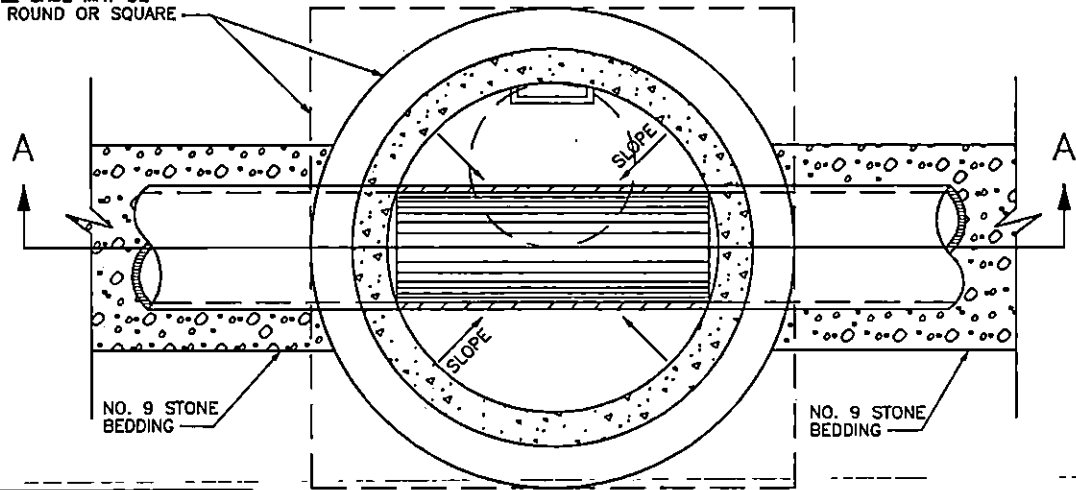
**LEXINGTON**

DIVISION OF ENGINEERING

SANITARY SEWER PIPE:  
 TYPES & MAXIMUM  
 ALLOWABLE FILL HEIGHTS

STANDARD DRAWING NO.	204
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

MANHOLE BASE MAY BE EITHER ROUND OR SQUARE



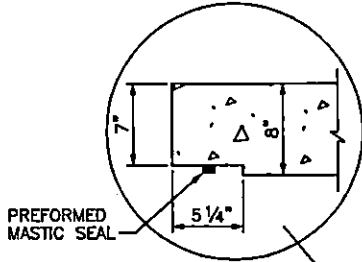
**SECTION B-B**

**NOTES:**

1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.
2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. WATER STOPS SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 FOR WATER STOP DETAIL.
4. MANHOLES MUST PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.

PROVIDE COLLAR OF 6" FOR FUTURE ADJUSTMENT PRECAST CONCRETE RINGS

SET FRAME CASTING IN FULL MASTIC BED; FOR WATERTIGHT FRAME & LID - SEE APPLICABLE STANDARD DRAWING

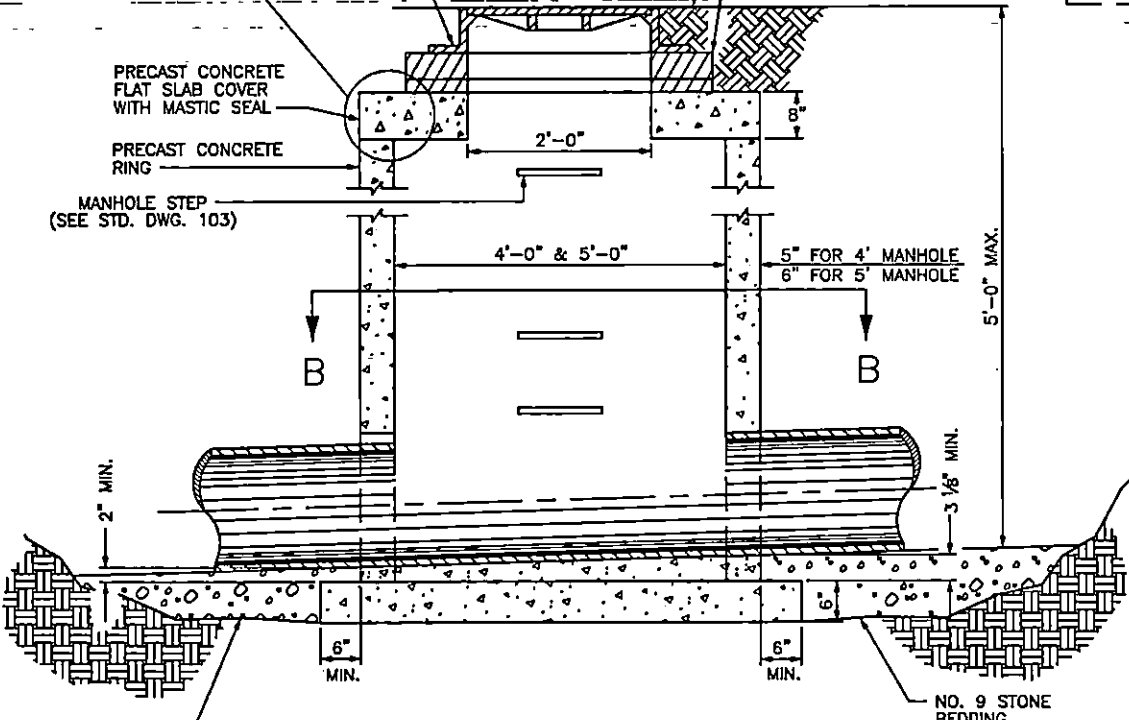


PREFORMED MASTIC SEAL

PRECAST CONCRETE FLAT SLAB COVER WITH MASTIC SEAL

PRECAST CONCRETE RING

MANHOLE STEP (SEE STD. DWG. 103)



**SECTION A-A**

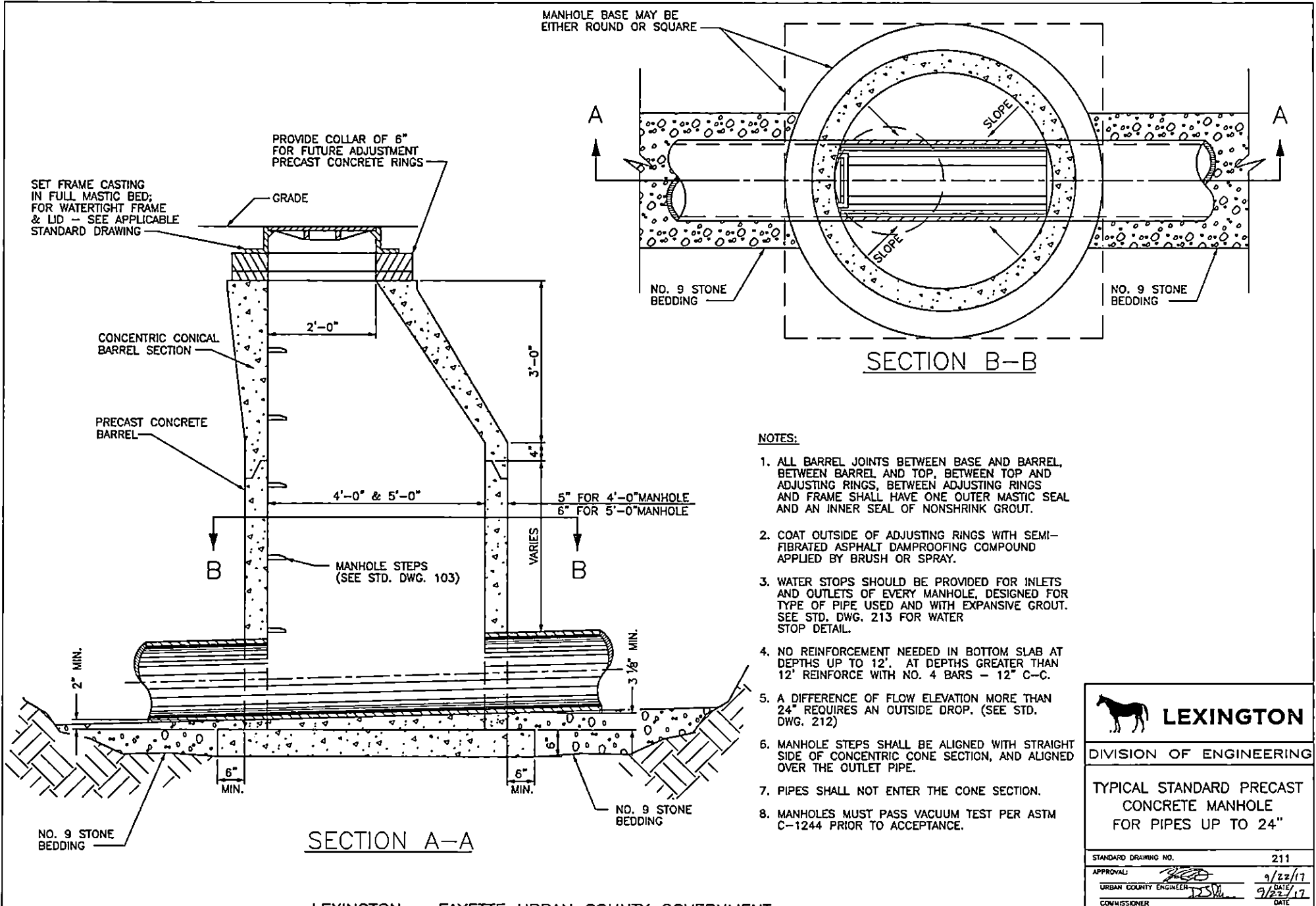
(PIPE WITH TOP HALF REMOVED OR PAVED INVERT)



DIVISION OF ENGINEERING


TYPICAL PRECAST CONCRETE SHALLOW MANHOLE FOR PIPES 24" AND LARGER

STANDARD DRAWING NO.	210
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17
	DATE



**NOTES:**

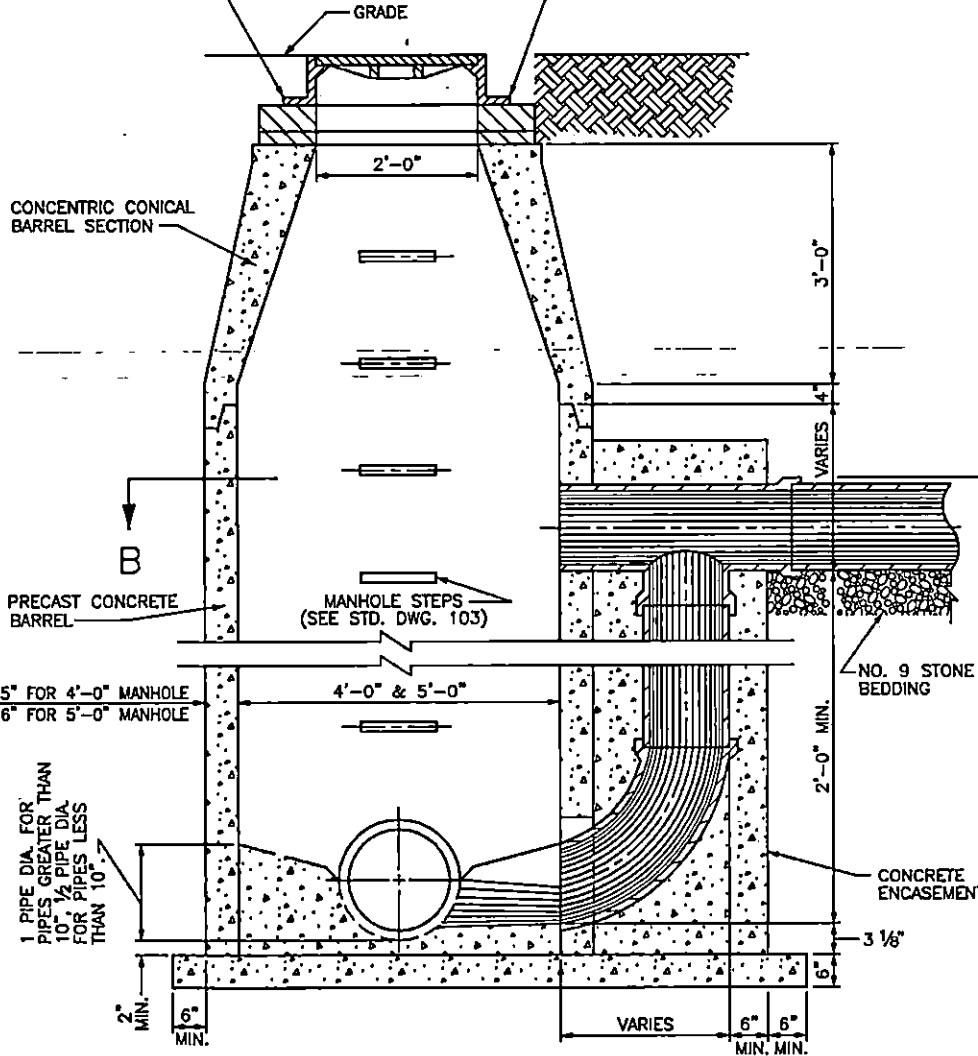
1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.
2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. WATER STOPS SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 FOR WATER STOP DETAIL.
4. NO REINFORCEMENT NEEDED IN BOTTOM SLAB AT DEPTHS UP TO 12'. AT DEPTHS GREATER THAN 12' REINFORCE WITH NO. 4 BARS - 12" C-C.
5. A DIFFERENCE OF FLOW ELEVATION MORE THAN 24" REQUIRES AN OUTSIDE DROP. (SEE STD. DWG. 212)
6. MANHOLE STEPS SHALL BE ALIGNED WITH STRAIGHT SIDE OF CONCENTRIC CONE SECTION, AND ALIGNED OVER THE OUTLET PIPE.
7. PIPES SHALL NOT ENTER THE CONE SECTION.
8. MANHOLES MUST PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
TYPICAL STANDARD PRECAST CONCRETE MANHOLE FOR PIPES UP TO 24"	
STANDARD DRAWING NO.	211
APPROVAL	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

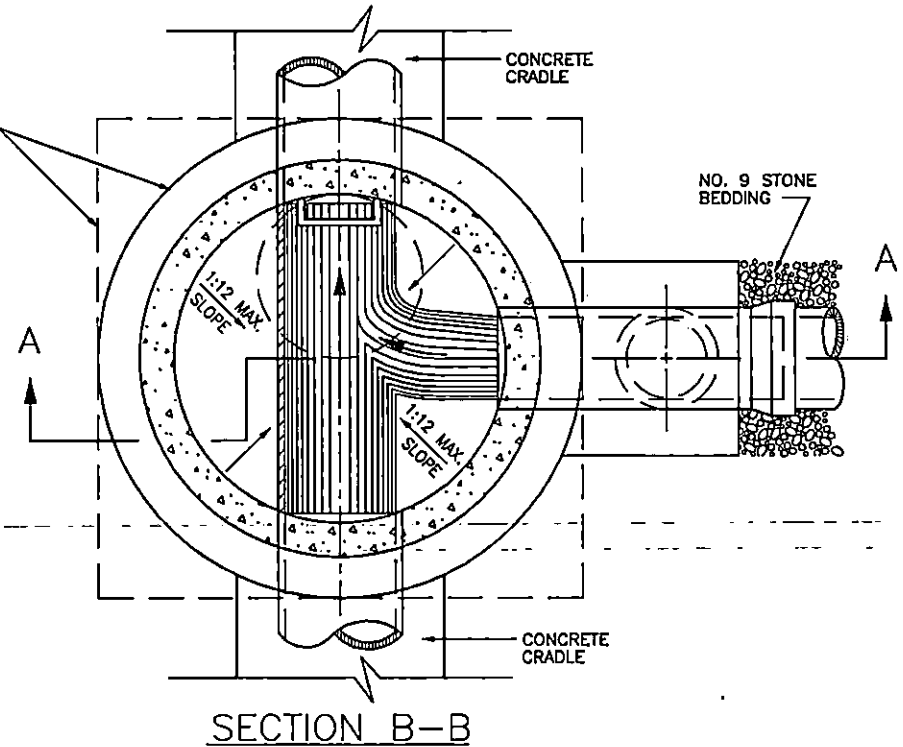
SET FRAME CASTING IN MASTIC BED FOR WATERTIGHT FRAME & LID - SEE APPLICABLE STANDARD DRAWING

PROVIDE COLLAR OF 6" FOR FUTURE ADJUSTMENT PRECAST CONCRETE RINGS

MANHOLE BASE MAY BE EITHER ROUND OR SQUARE




SECTION A-A

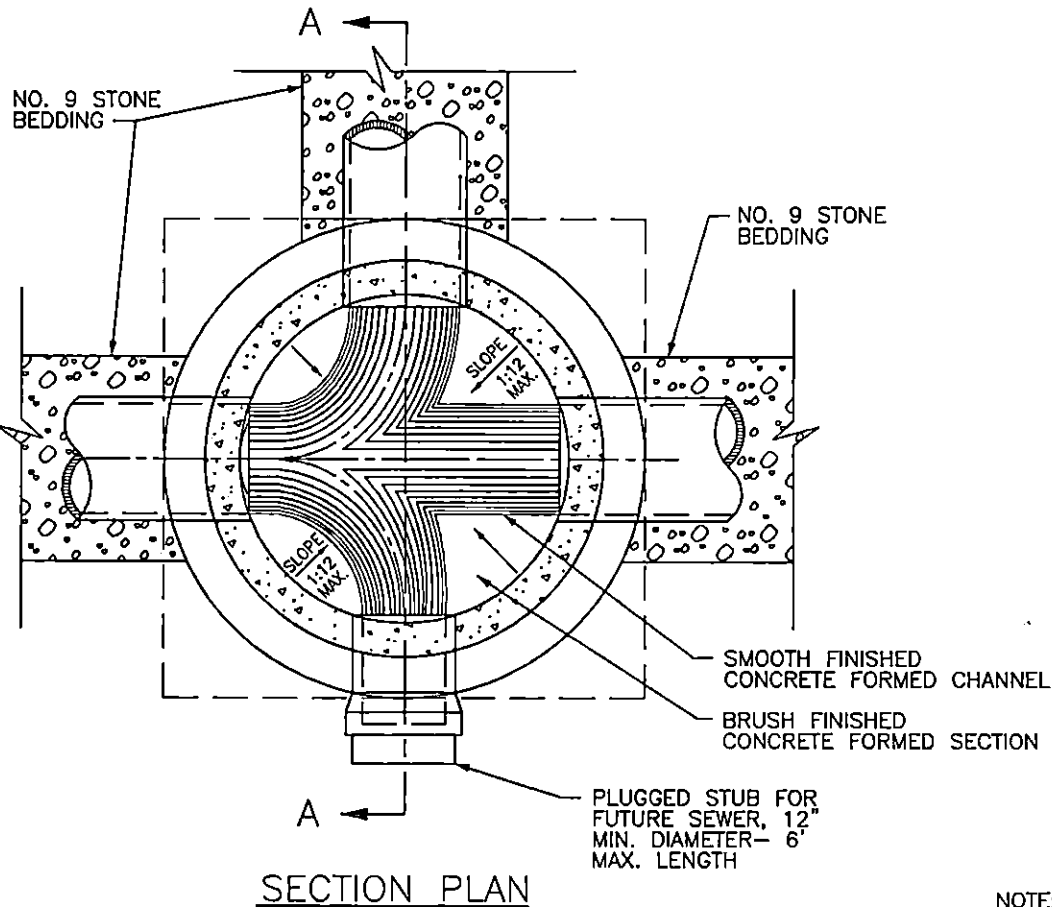
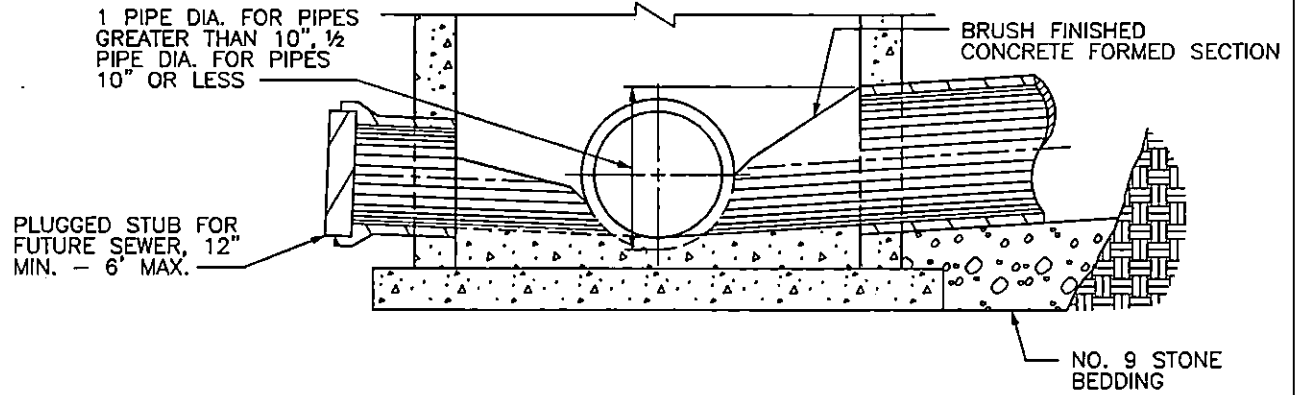


SECTION B-B

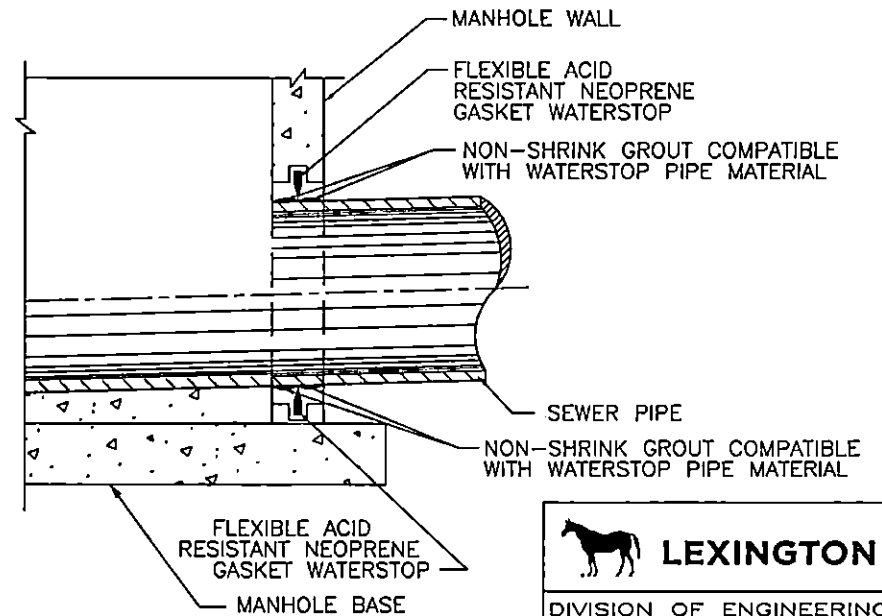
NOTES:

1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.
2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. WATER STOPS SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 APPLICABLE FOR WATER STOP DETAIL.
4. NO REINFORCEMENT NEEDED IN BOTTOM SLAB AT DEPTHS UP TO 12'. AT DEPTHS GREATER THAN 12' REINFORCE WITH NO. 4 BARS - 12" C-C.
5. PROVIDE A MINIMUM FALL OF 0.1 FOOT FROM DROP TO MANHOLE OUTLET.
6. MANHOLES SHALL PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.
7. PIPE SHALL NOT ENTER CONE SECTION.
8. MANHOLE STEPS SHALL BE ALIGNED WITH STRAIGHT SIDE OF CONCENTRIC CONE SECTION, AND ALIGNED OVER OUTLET PIPE.
9. DO NOT USE IN CASES WHERE THE DROP IS 2'-0" OR LESS.

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
TYPICAL PRECAST CONCRETE DROP MANHOLE FOR PIPES UP TO 36"	
STANDARD DRAWING NO.	212
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	9/22/17
COMMISSIONER	DATE



SECTION A-A



WATER STOP DETAIL

**NOTE:**  
MANHOLES SHALL PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.



**LEXINGTON**

DIVISION OF ENGINEERING

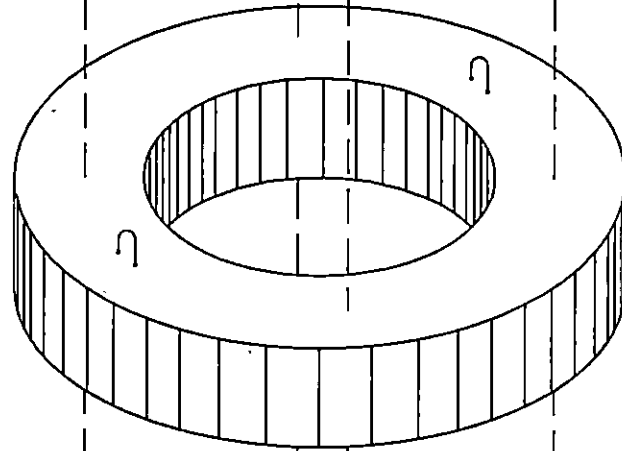
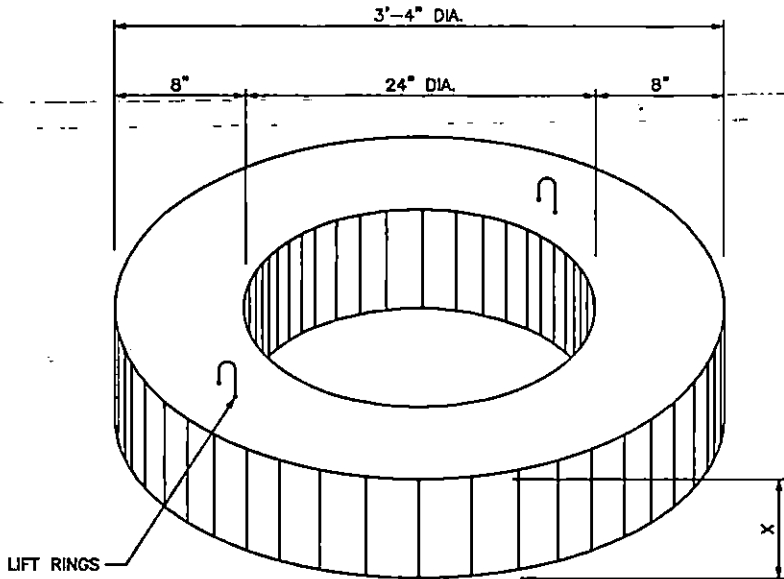
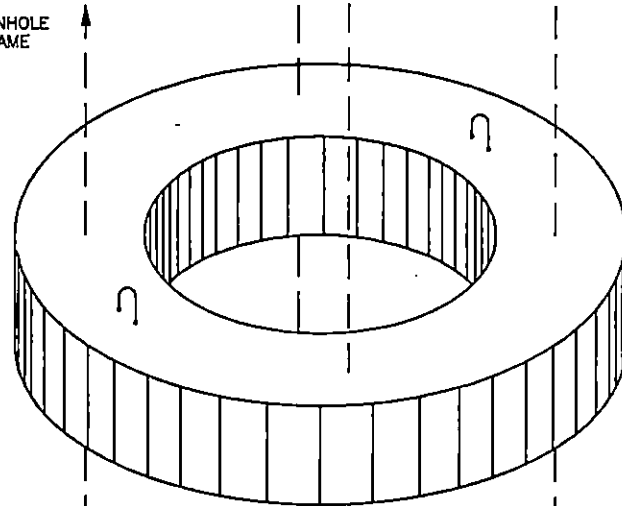
STANDARD MANHOLE  
JUNCTION AND WATER  
STOP DETAILS

STANDARD DRAWING NO.	213
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

**NOTES:**

1. LIFT RINGS TO BE CUT BEFORE ADDING THE NEXT RING OR TOP.
2. COAT OUTSIDE AND IN BETWEEN ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. GRADE RINGS WITH NON-PARALLEL SURFACES MAY BE USED TO ADJUST CASTING TO SLOPED SURFACE.
4. CONCRETE: CLASS "A" 3500 PSI AT 28 DAYS, AND IN ACCORDANCE WITH ASTM C-478, OR APPROVED EQUAL.
5. NO MORE THAN 2 GRADE RINGS MAY BE USED AT ONE LOCATION AND THE MAXIMUM HEIGHT OF ALL RINGS USED SHALL NOT EXCEED 12 INCHES.
6. APPLY MASTIC BETWEEN ALL JOINTS.

TO MANHOLE  
LID FRAME



TO MANHOLE ECCENTRIC  
CONE SECTION

GRADE RING  
WIDTH CHART

X	WEIGHT LBS.
2"	140
3"	210
4"	279
6"	419
8"	560
12"	730



**LEXINGTON**

DIVISION OF ENGINEERING

SEWER MANHOLE ADJUSTMENT  
GRADE RINGS

STANDARD DRAWING NO. 214

APPROVAL: *[Signature]* 9/22/17  
 URBAN COUNTY ENGINEER DATE  
 COMMISSIONER *[Signature]* 9/22/17 DATE

## GENERAL NOTES

## SPECIFICATIONS

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. SHALLOW MANHOLE TYPE CONSTRUCTION SHOWN ON STD. DWG. 210 MAY BE USED FOR ALL MANHOLES UP TO 5' IN DEPTH.</li> <li>2. ALL DIMENSIONS ARE BASED ON SIZE OF LARGEST PIPE IN MANHOLE.</li> <li>3. MANHOLES FOR PIPE LARGER THAN 36" SHALL BE SPECIALLY DESIGNED.</li> <li>4. BOTTOM SLAB OF MANHOLES SHALL BE SPECIALLY DESIGNED WITH REGARD TO AREA, THICKNESS, AND REINFORCING IN SITUATIONS WHERE HIGH WATER TABLE OR UNSTABLE SOIL CONDITIONS EXIST.</li> <li>5. MANHOLE STEPS SHALL BE INSTALLED IN A VERTICAL LINE AND SHALL COMPLY WITH OSHA STANDARDS IN ALL RESPECTS.</li> <li>6. ALL FLOORS OF MANHOLES SHALL SLOPE AT LEAST 1" PER FT. FROM WALL TO CHANNELS AND SHALL HAVE SMOOTH FLOAT AND BRUSH FINISH.</li> <li>7. CHANNEL SURFACE OF MANHOLES FROM INLET TO OUTLET SHALL HAVE SMOOTH FLOAT FINISH.</li> <li>8. ELEVATIONS OF PIPES IN MANHOLES SHALL BE SUCH THAT THE TOP OF ALL INFLUENT PIPES WILL BE AT AN ELEVATION EQUAL TO OR GREATER THAN THE TOP OF THE EFFLUENT PIPE.</li> </ol> | <ol style="list-style-type: none"> <li>9. A MINIMUM FALL OF 0.10 FOOT SHALL BE PROVIDED.</li> <li>10. BASE OF MANHOLES GREATER THAN 12' DEEP TO BE REINFORCED WITH NO. 4 BARS AT 12" BOTH WAYS.</li> <li>11. ASPHALT DAMPROOFING COMPOUND IS REQUIRED ON PRECAST MANHOLES IN WET AREAS OR OTHERWISE AS DIRECTED BY THE ENGINEER.</li> <li>12. LEAKS IN MANHOLES OBSERVED DURING CONSTRUCTION OR INSPECTION SHALL BE CORRECTED IMMEDIATELY.</li> <li>13. MANHOLES SHALL PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.</li> <li>14. ALL INLETS, INCLUDING LATERALS, MUST HAVE FLOW CHANNELS.</li> <li>15. NEW CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES MUST REPLACE EXISTING BRICK MANHOLES OR DAMAGED MANHOLES AT NO EXPENSE TO THE LFUCG.</li> <li>16. FIELD POURED BASES (DOGHOUSE MANHOLES) SHALL ONLY BE ALLOWED WITH PRIOR APPROVAL OF THE LFUCG.</li> </ol> |
|---|---|

1. CASTINGS SHALL BE ASTM A-48, CLASS 35.
2. CONCRETE FOR MANHOLES, CRADLE ENCASEMENT, ETC. SHOWN IN THESE DETAILS SHALL BE CLASS "A".
3. CONCRETE MANHOLE BARREL CONSTRUCTION SHALL CONFORM TO ASTM C-478 OR ITS LATEST REVISION.



**LEXINGTON**

DIVISION OF ENGINEERING

MANHOLE SIZE STANDARDS  
AND GENERAL NOTES  
FOR DEEP MANHOLES

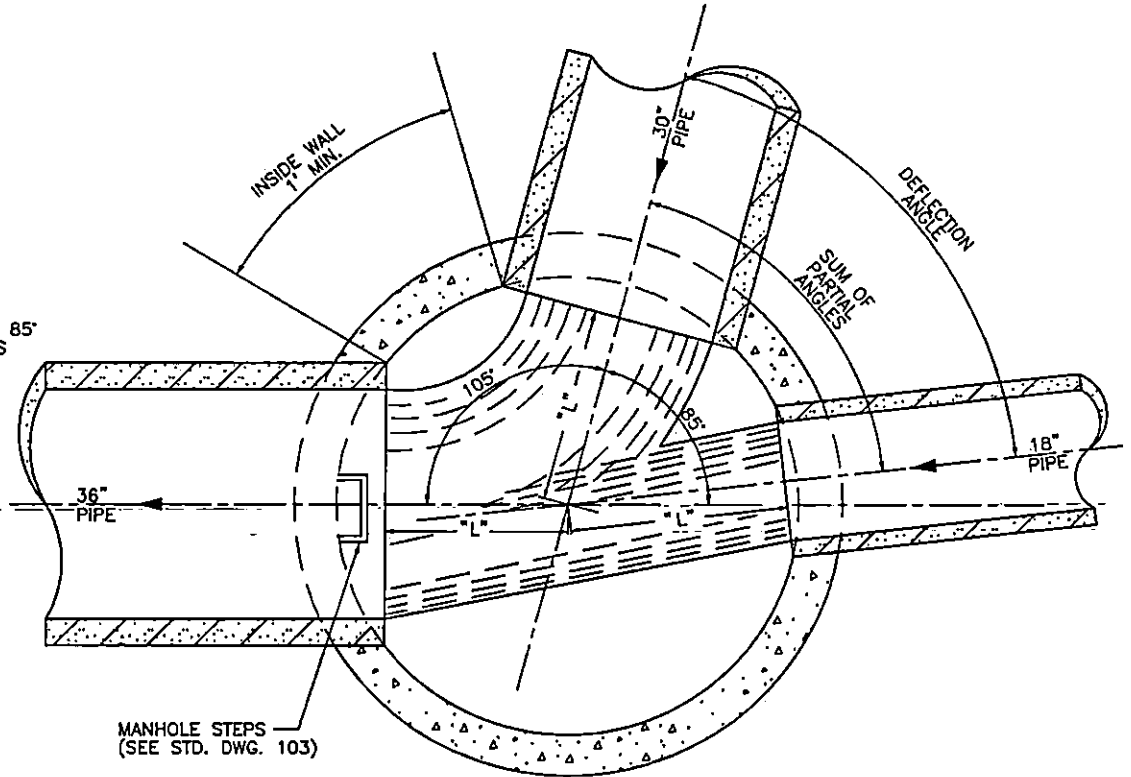
STANDARD DRAWING NO.	216
APPROVAL	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

**CIRCULAR MANHOLE NOTES:**

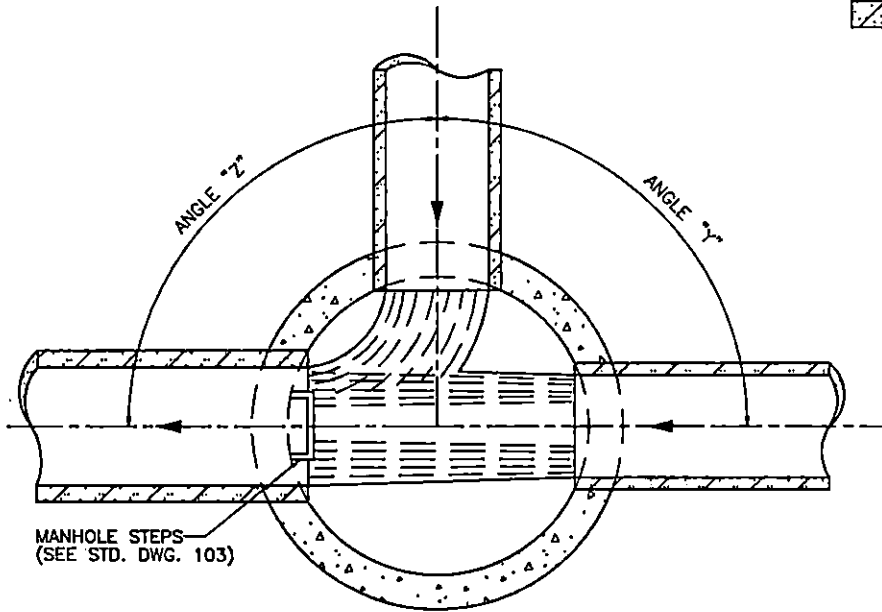
1. THE ANGLE BETWEEN ANY TWO PIPES (e.g. ANGLE "Y" OR "Z") MUST BE GREATER THAN THE SUM OF THE PARTIAL ANGLES. REFER TO SEPARATE STANDARD DRAWINGS FOR TABLE OF MINIMUM PARTIAL ANGLES. ANGLES SMALLER THAN LISTED ON TABLE SHALL REQUIRE LARGER MANHOLE SELECTION.
2. THE MAXIMUM DEFLECTION ANGLE BETWEEN ANY INCOMING PIPE AND THE CENTERLINE EXTENSION OF THE DISCHARGE PIPE SHALL BE NO MORE THAN 90° FOR PIPES UP TO 24" IN DIAMETER. THE MAXIMUM DEFLECTION ANGLE FOR 27" TO 36" PIPES SHALL BE 75°.

**EXAMPLE FOR SANITARY MANHOLE SIZE SELECTION:**

FOR MANHOLE SHOWN AT RIGHT, THE ANGLE BETWEEN THE 18" AND 30" PIPES IS 85° AND THE ANGLE BETWEEN THE 30" AND 36" PIPES IS 105°. THE TABLE INDICATES THAT FOR A 5'-0" DIAMETER MANHOLE THE MINIMUM PARTIAL ANGLE FOR AN 18" PIPE IS 34° AND FOR A 30" PIPE IS 50°. THE SUM OF THE PARTIAL ANGLES IS 84°. THIS SUM IS LESS THAN THE 85° THEREFORE, A 5'-0" MANHOLE DIAMETER IS ACCEPTABLE.



**PLAN SECTION**



**PLAN SECTION**

**TABLE OF MINIMUM PARTIAL ANGLES FOR SANITARY MANHOLES**

PIPE SIZE	MANHOLE SIZE			
	4'-0"		5'-0"	
	P. ANGLE	L. DIST.	P. ANGLE	L. DIST.
15"	38°	1'-10"	30°	2'-3"
18"	43°	1'-8"	34°	2'-3"
24"	53°	1'-6"	39°	2'-2"
27"	-	-	45°	2'-0"
30"	-	-	50°	1'-11"

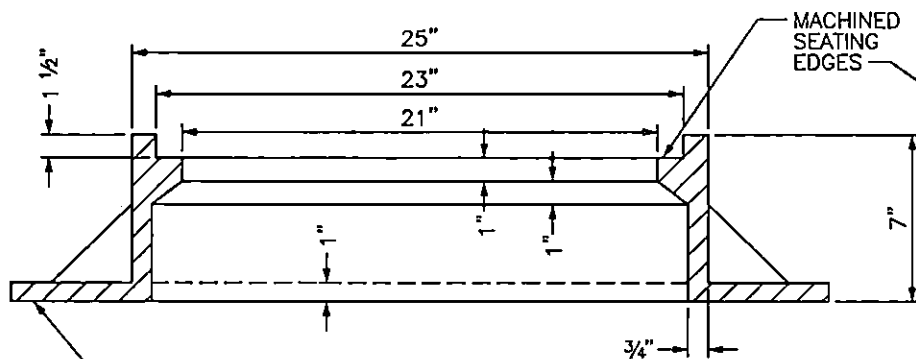
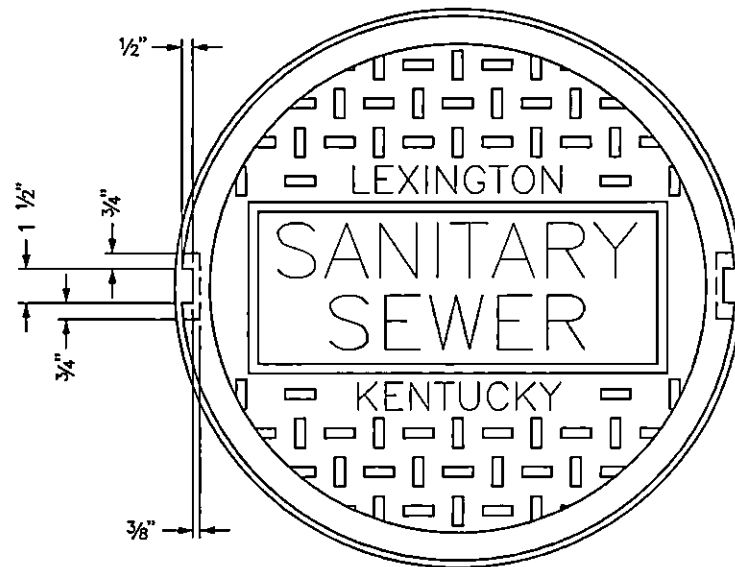
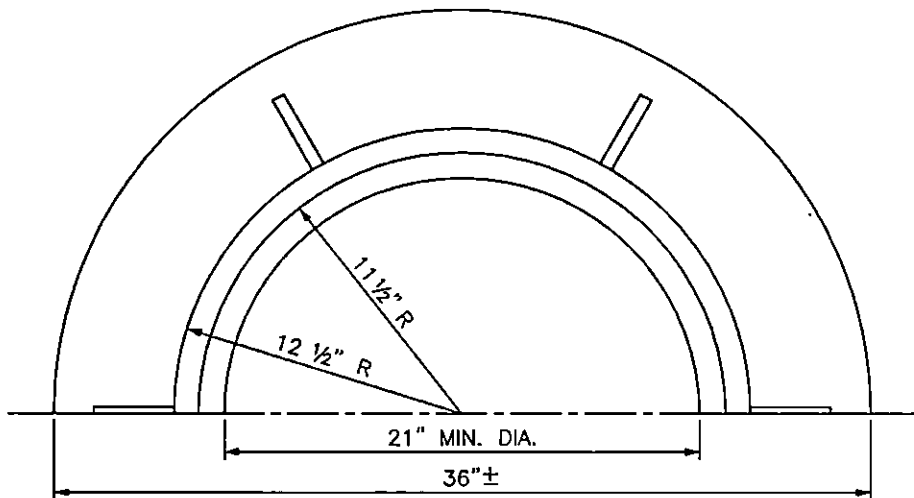


DIVISION OF ENGINEERING

DEFLECTION ANGLE CRITERIA FOR SANITARY MANHOLES

STANDARD DRAWING NO. 217  
 APPROVAL: [Signature] 9/22/17  
 URBAN COUNTY ENGINEER [Signature] DATE 9/22/17  
 COMMISSIONER [Signature] DATE



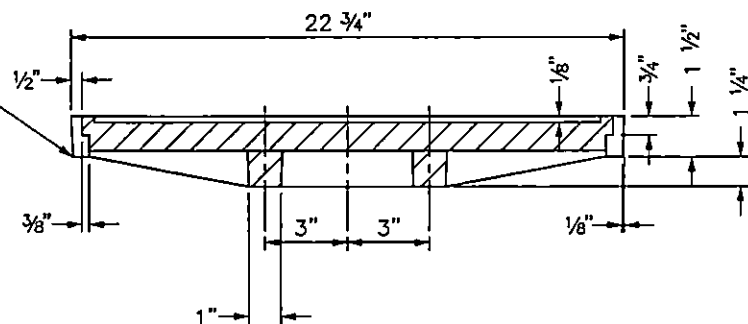


SET FRAME CASTING IN FULL MORTAR BED, FOR WATERTIGHT MANHOLE FRAME AND LID - SEE APPLICABLE STANDARD DRAWING


FRAME DETAIL

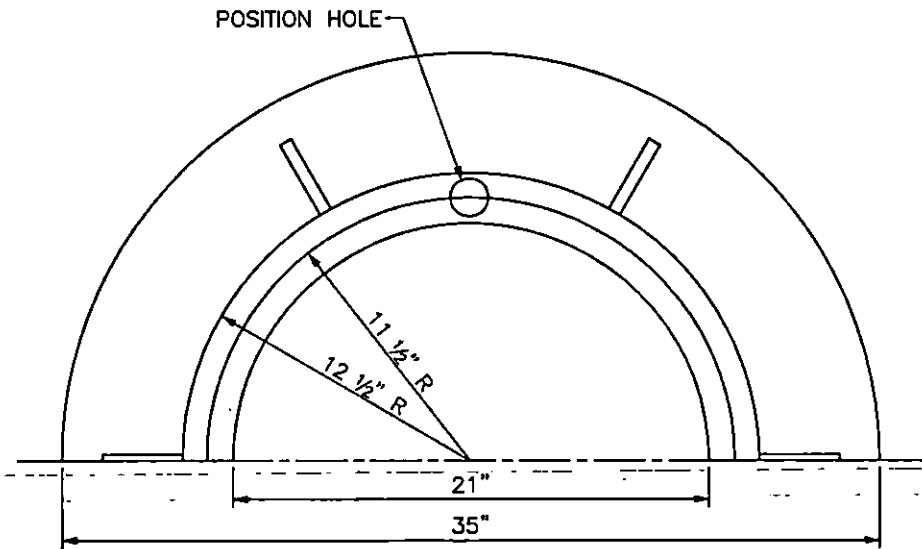
NOTE:

MANHOLE FRAME & LID ASSEMBLY SHALL HAVE A MINIMUM LID WEIGHT OF 120 LBS. AND A TOTAL MINIMUM FRAME & LID WEIGHT OF 305 LBS. WITH ALL STEEL IN ACCORDANCE WITH ASTM A-48 CLASS 35 SPEC.

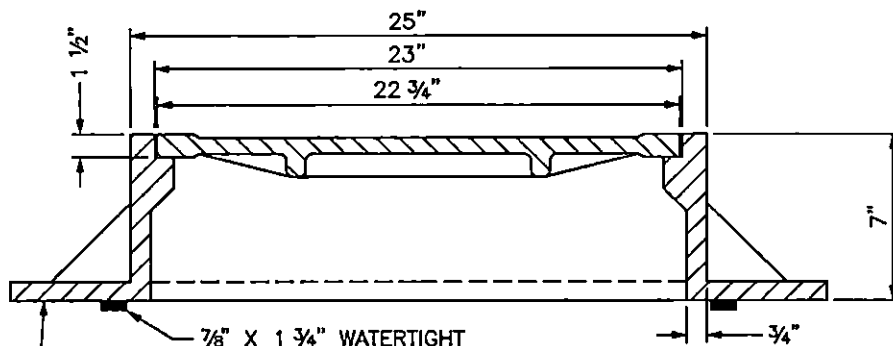
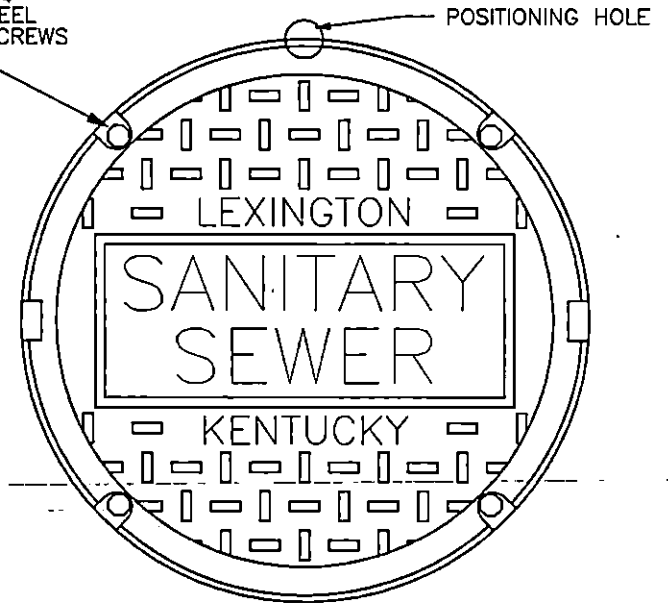


COVER DETAIL

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
STANDARD CIRCULAR MANHOLE FRAME & COVER	
STANDARD DRAWING NO.	220
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17 DATE



4 1/2"-13"x1 3/4"  
STAINLESS STEEL  
REC'D CAP SCREWS  
GREASED



SET FRAME CASTING IN FULL MORTAR  
BED, FOR WATERTIGHT MANHOLE FRAME  
AND LID - SEE APPLICABLE STANDARD  
DRAWING.

FRAME DETAIL

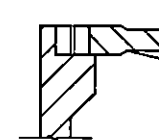
NOTE:

MANHOLE FRAME & LID ASSEMBLY SHALL BE NEENAH  
#R-1916-D OR APPROVED EQUAL, HAVE A MINIMUM LID  
WEIGHT OF 150 LBS. AND A TOTAL MINIMUM FRAME  
& LID WEIGHT OF 335 LBS. WITH ALL STEEL IN  
ACCORDANCE WITH ASTM A-48 CLASS 35 SPEC.  
OR HIGHER.

4 - S.S. 3/8" DIA.  
BOLTS GREASED


3/8" O-RING GUIDE  
TO FRAME

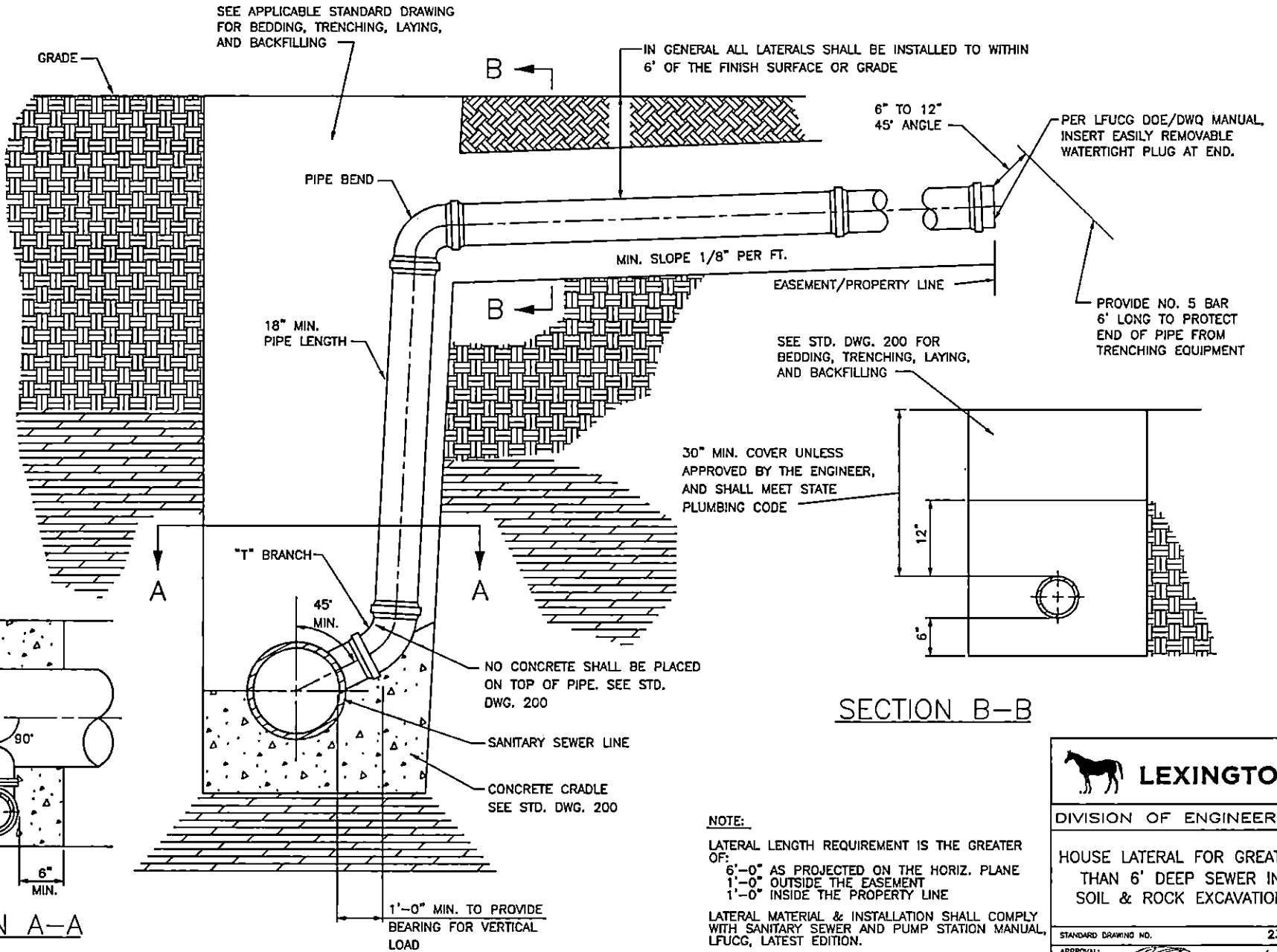
WATERTIGHT DETAIL



POSITIONING  
HOLE

COVER DETAIL




 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
STANDARD WATERTIGHT MANHOLE FRAME & COVER	
STANDARD DRAWING NO.	222
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17 DATE

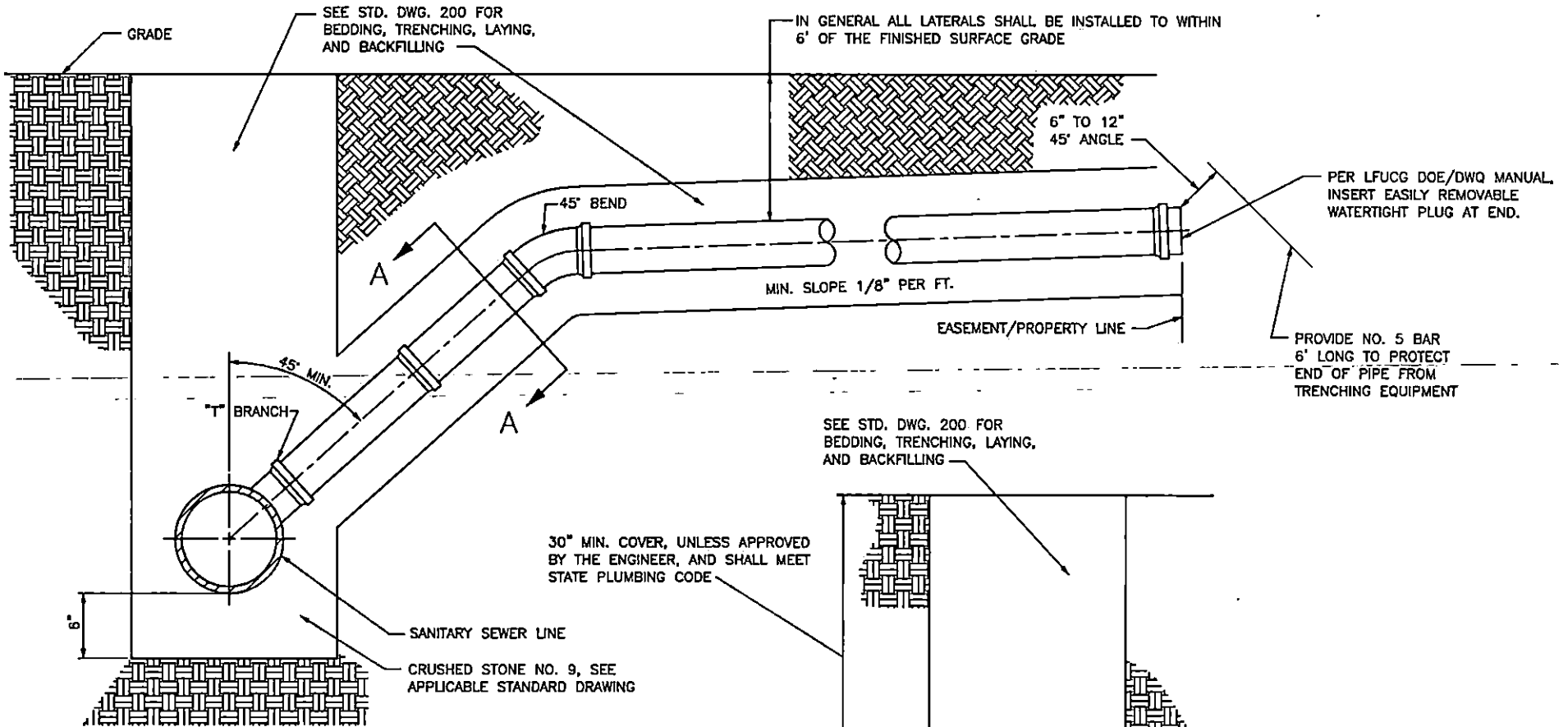


**NOTE:**

LATERAL LENGTH REQUIREMENT IS THE GREATER OF:  
 6'-0" AS PROJECTED ON THE HORIZ. PLANE  
 1'-0" OUTSIDE THE EASEMENT  
 1'-0" INSIDE THE PROPERTY LINE

LATERAL MATERIAL & INSTALLATION SHALL COMPLY WITH SANITARY SEWER AND PUMP STATION MANUAL, LFUGC, LATEST EDITION.

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
HOUSE LATERAL FOR GREATER THAN 6' DEEP SEWER IN SOIL & ROCK EXCAVATION	
STANDARD DRAWING NO. 230	
APPROVAL: 	9/22/17
URBAN COUNTY ENGINEER 	DATE 9/22/17
COMMISSIONER	DATE




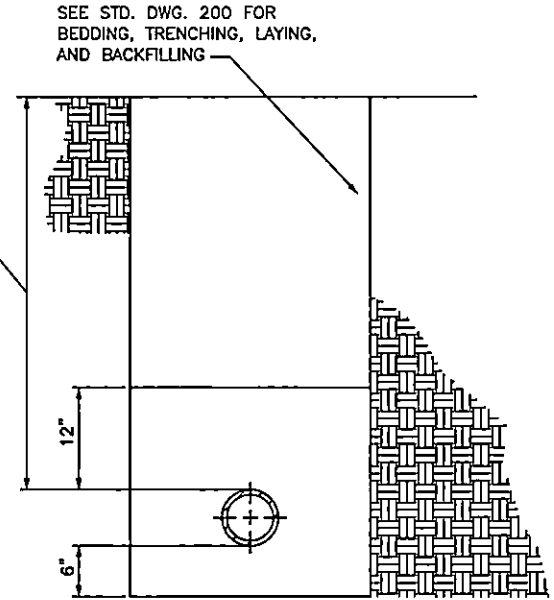
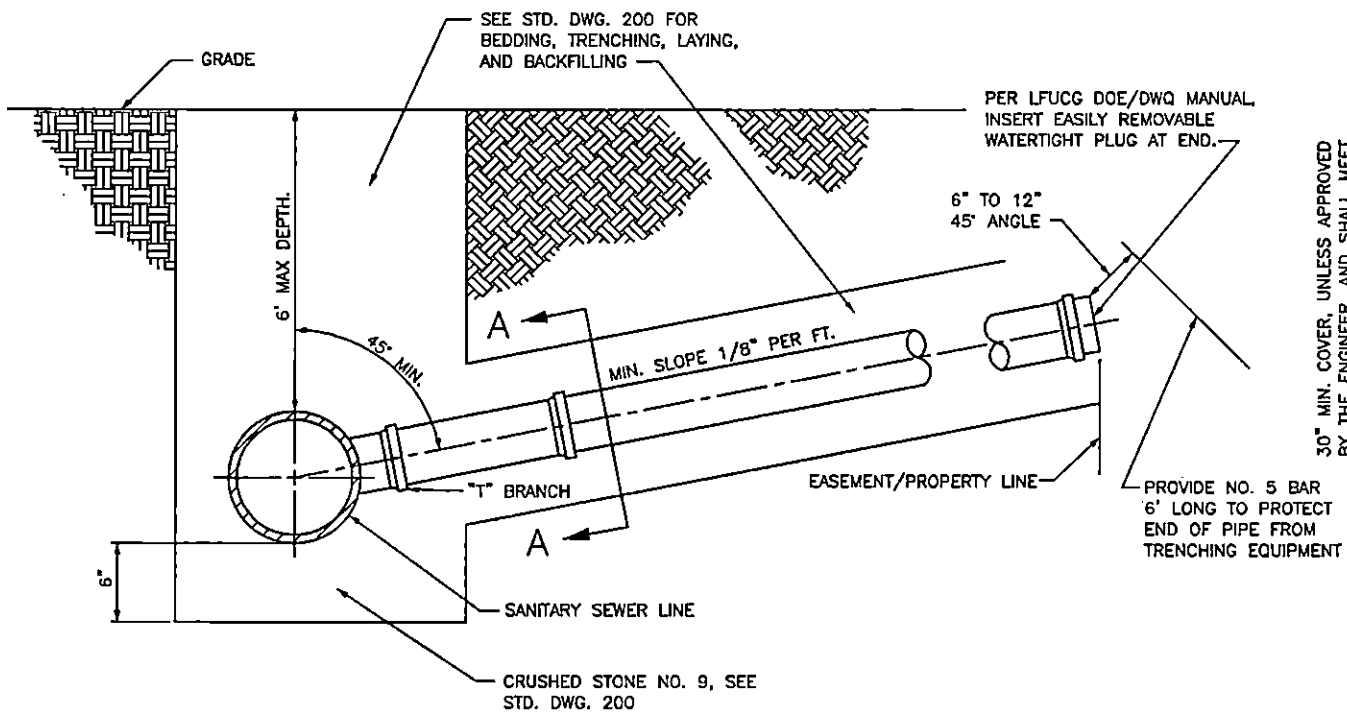
**NOTE:**

LATERAL LENGTH REQUIREMENT IS THE GREATER OF:  
 6'-0" AS PROJECTED ON THE HORIZ. PLANE  
 1'-0" OUTSIDE THE EASEMENT  
 1'-0" INSIDE THE PROPERTY LINE

LATERAL MATERIAL & INSTALLATION SHALL COMPLY WITH SANITARY SEWER AND PUMP STATION MANUAL, LFUGG, LATEST EDITION.

**SECTION A-A**

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
HOUSE LATERAL FOR GREATER THAN 6' DEEP SEWER IN SOIL	
STANDARD DRAWING NO.	231
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



SECTION A-A

**NOTE:**

LATERAL LENGTH REQUIREMENT IS THE GREATER OF:  
 6'-0" AS PROJECTED ON THE HORIZ. PLANE  
 1'-0" OUTSIDE THE EASEMENT  
 1'-0" INSIDE THE PROPERTY LINE

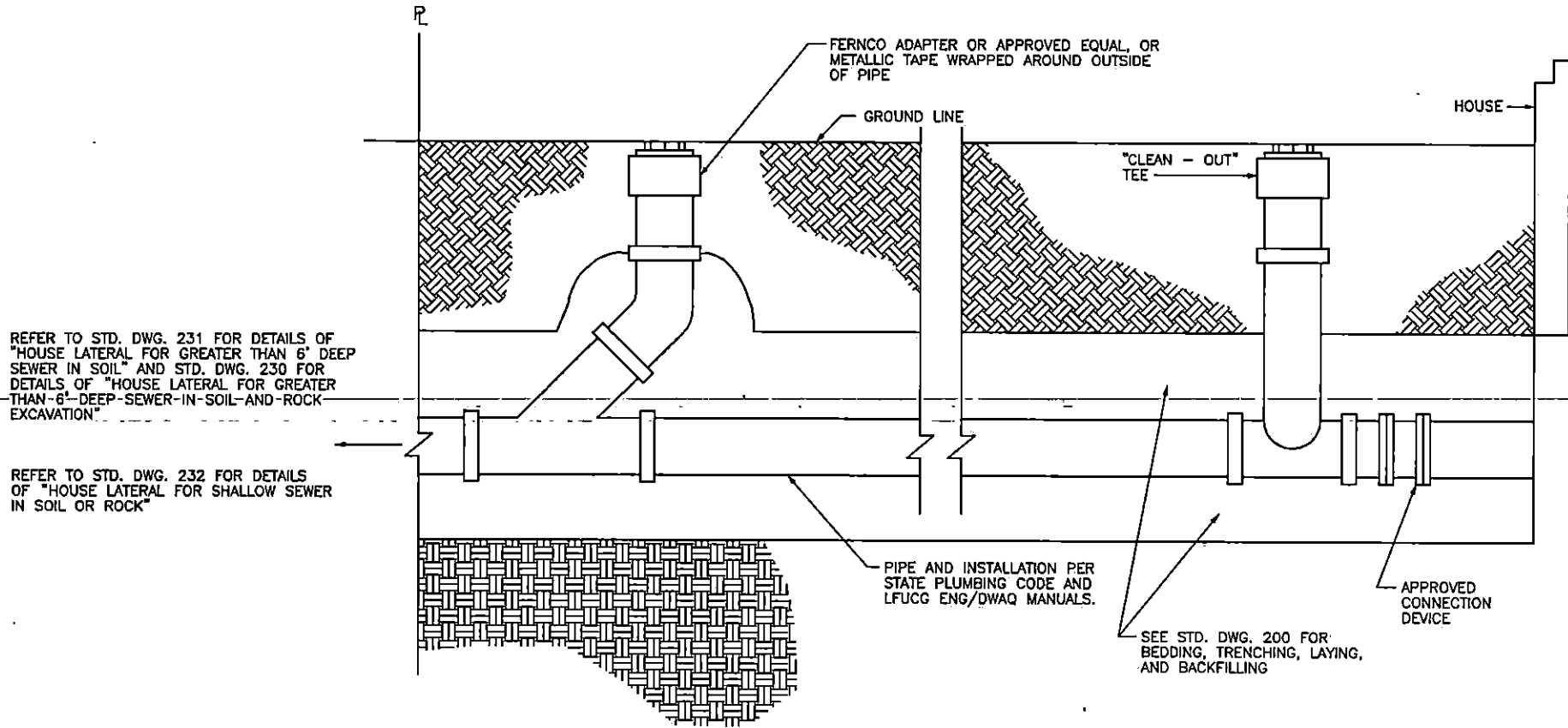
LATERAL MATERIAL & INSTALLATION SHALL COMPLY WITH SANITARY SEWER AND PUMP STATION MANUAL LFUGG, LATEST EDITION.



DIVISION OF ENGINEERING

HOUSE LATERAL FOR SHALLOW SEWER IN SOIL OR ROCK

STANDARD DRAWING NO.	232
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



REFER TO STD. DWG. 231 FOR DETAILS OF "HOUSE LATERAL FOR GREATER THAN 6' DEEP SEWER IN SOIL" AND STD. DWG. 230 FOR DETAILS OF "HOUSE LATERAL FOR GREATER THAN 6'-DEEP-SEWER-IN-SOIL-AND-ROCK EXCAVATION"

REFER TO STD. DWG. 232 FOR DETAILS OF "HOUSE LATERAL FOR SHALLOW SEWER IN SOIL OR ROCK"

PIPE AND INSTALLATION PER STATE PLUMBING CODE AND LFUCG ENG/DWAQ MANUALS.

APPROVED CONNECTION DEVICE

SEE STD. DWG. 200 FOR BEDDING, TRENCHING, LAYING, AND BACKFILLING

**NOTE:**

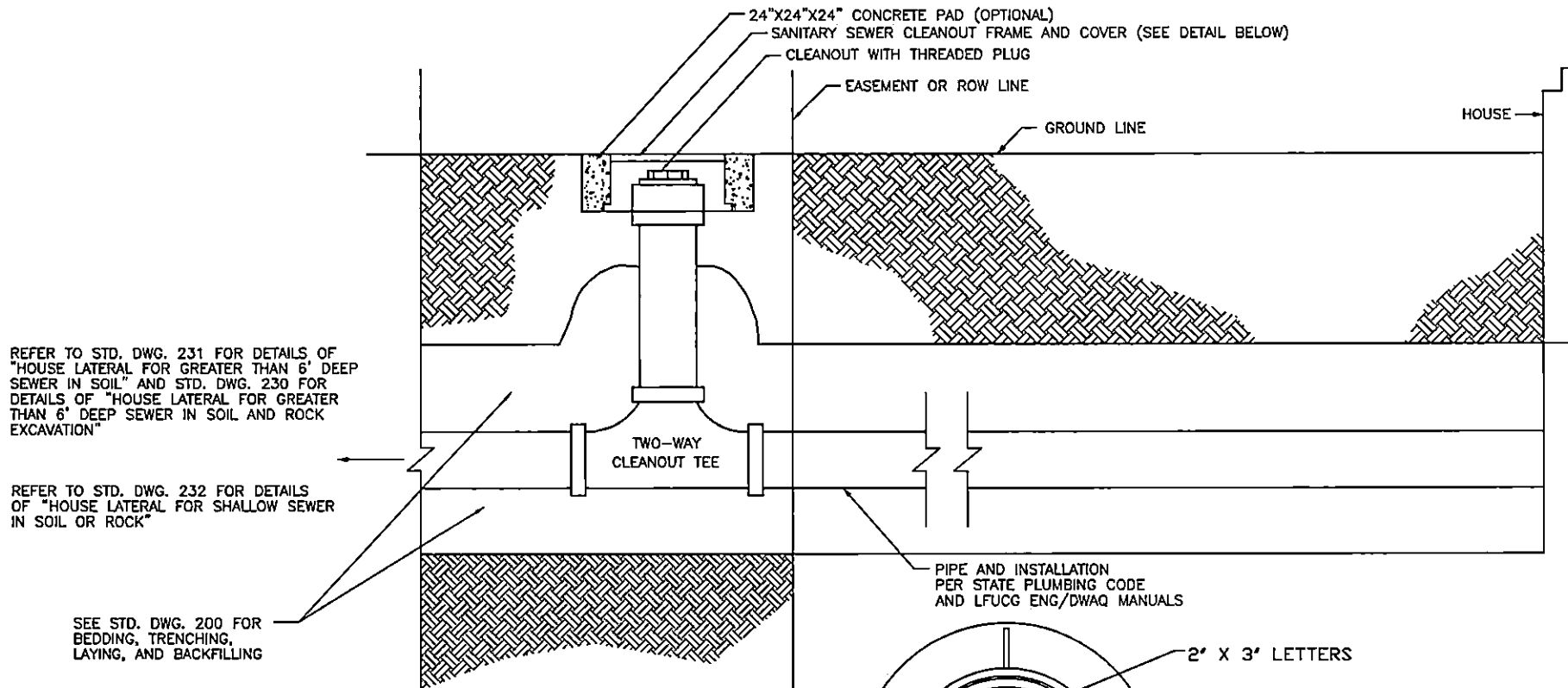
SEWER PIPE FROM HOUSE TO THE LONG SWEEP "L" MUST BE IN ACCORDANCE WITH STATE PLUMBING CODE AND LFUCG ENG/DWAG MANUALS.



DIVISION OF ENGINEERING

LATERAL CLEANOUT IN NON-PAVED AREAS AND YARDS

STANDARD DRAWING NO.	233
APPROVAL:	
URBAN COUNTY ENGINEER	9/22/17
COMMISSIONER	DATE

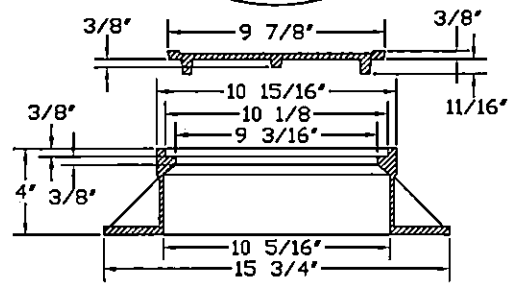
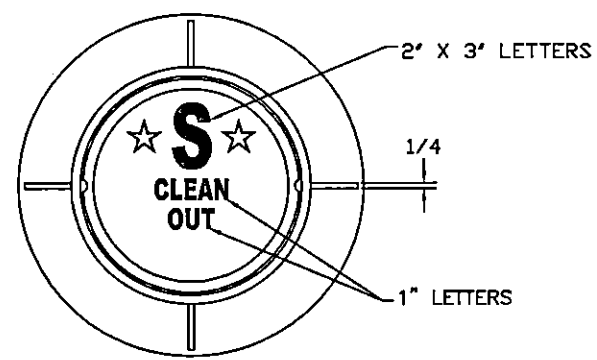


REFER TO STD. DWG. 231 FOR DETAILS OF "HOUSE LATERAL FOR GREATER THAN 6' DEEP SEWER IN SOIL" AND STD. DWG. 230 FOR DETAILS OF "HOUSE LATERAL FOR GREATER THAN 6' DEEP SEWER IN SOIL AND ROCK EXCAVATION"

REFER TO STD. DWG. 232 FOR DETAILS OF "HOUSE LATERAL FOR SHALLOW SEWER IN SOIL OR ROCK"

SEE STD. DWG. 200 FOR BEDDING, TRENCHING, LAYING, AND BACKFILLING

PIPE AND INSTALLATION PER STATE PLUMBING CODE AND LFUGG ENG/DWAQ MANUALS




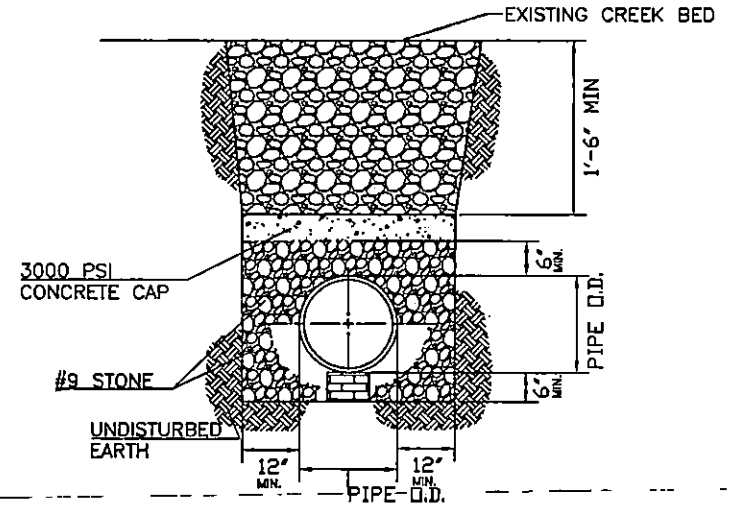
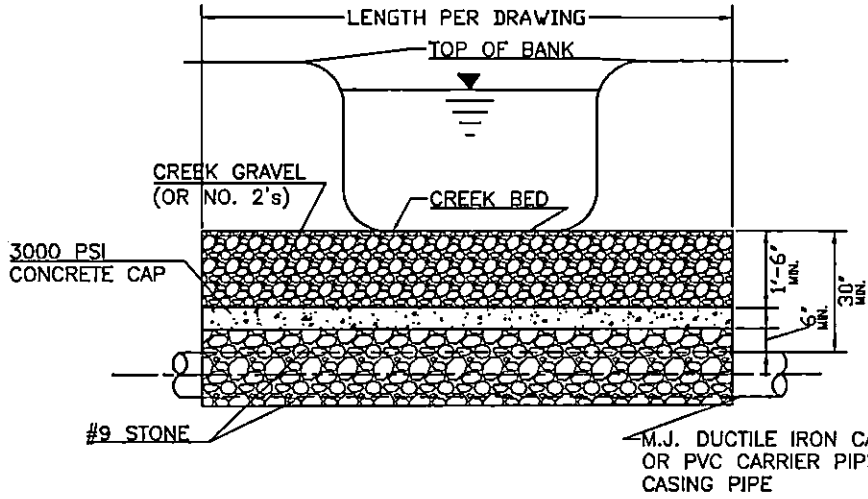
**NOTES:**

SEWER PIPE FROM HOUSE TO CLEANOUT MUST BE IN ACCORDANCE WITH STATE PLUMBING CODE AND LFUGG ENG/DWAQ MANUALS.

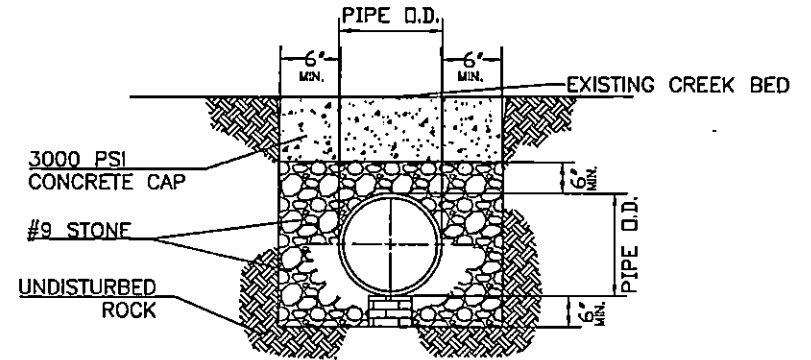
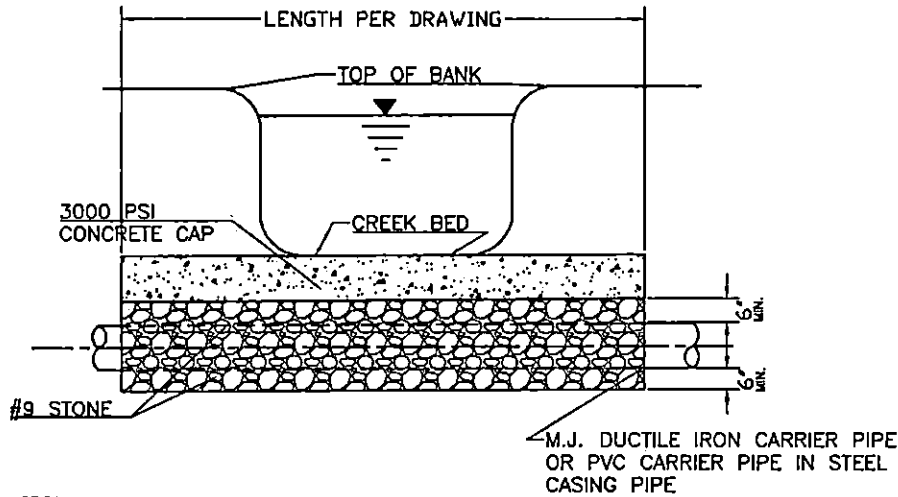
TWO-WAY CLEANOUT TEE IS TO BE INSTALLED BY THE PLUMBER AND OR CONTRACTOR PRIOR TO CONNECTION OF THE LATERAL TO PUBLIC SANITARY SEWER LINE.

CLEANOUT TO BE INSTALLED AT THE END OF PUBLICLY MAINTAINED SEWER. POINT TO BE DETERMINED BY THE DIVISION OF ENGINEERING.

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
RIGHT OF WAY OR EASEMENT LATERAL CLEANOUT IN NON-PAVED AREAS AND YARDS	
STANDARD DRAWING NO.	234
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



CREEK CROSSING DETAIL FOR SOIL CREEKBED



CREEK CROSSING DETAIL FOR ROCK CREEKBED

NOTES:

1. A WATERSTOP SHALL BE PROVIDED ON THE UPSTREAM SIDE OF THE DOWNSTREAM MANHOLE.
2. PIPE TO BE DUCTILE IRON WHEN DEPTH OF COVER IS LESS THAN 4'.
3. SPECIAL DESIGN REQUIRED WHEN COVER IS 30" OR LESS.
4. CONTRACTOR SHALL USE THE CREEK CROSSING DETAIL THAT CORRESPONDS TO THE CHANNEL BED ENCOUNTERED.

CONCRETE CAP SHALL BE PLACED ACROSS CHANNEL BED AND EXTEND 10 FT. MIN. INTO EACH CHANNEL BANK, MEASURED FROM BOTTOM OF BANK.

SAWCUT EDGE OF TRENCH (4" MIN. DEPTH) TO PREVENT FRACTURING OF SURFACE BEDROCK BEYOND TRENCH EXCAVATION (TYP. EACH SIDE).

WHILE CROSSING THE CREEK WITH EQUIPMENT, PROVIDE NECESSARY MEANS TO PREVENT FRACTURING OF BEDROCK OUTSIDE THE TRENCH, BY USING GRAVEL, SWAMP MATS, OR OTHER APPROVED METHOD.



**LEXINGTON**

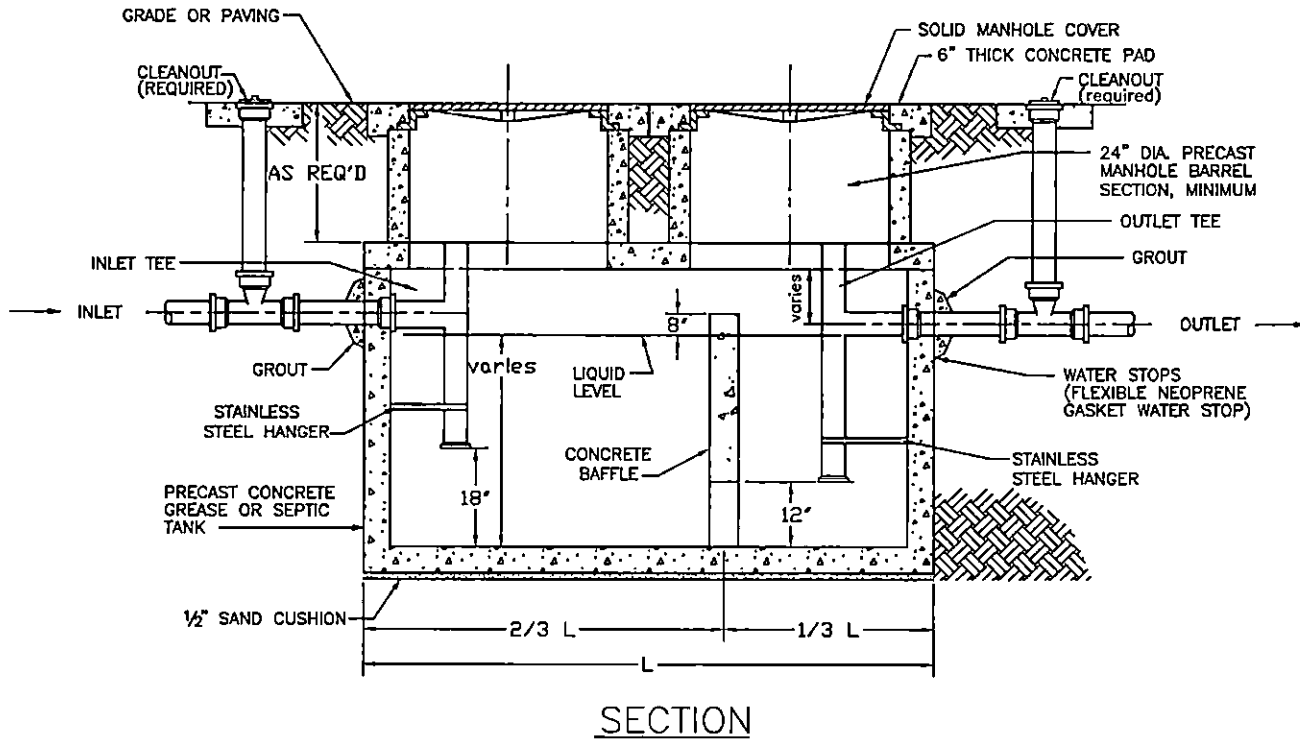
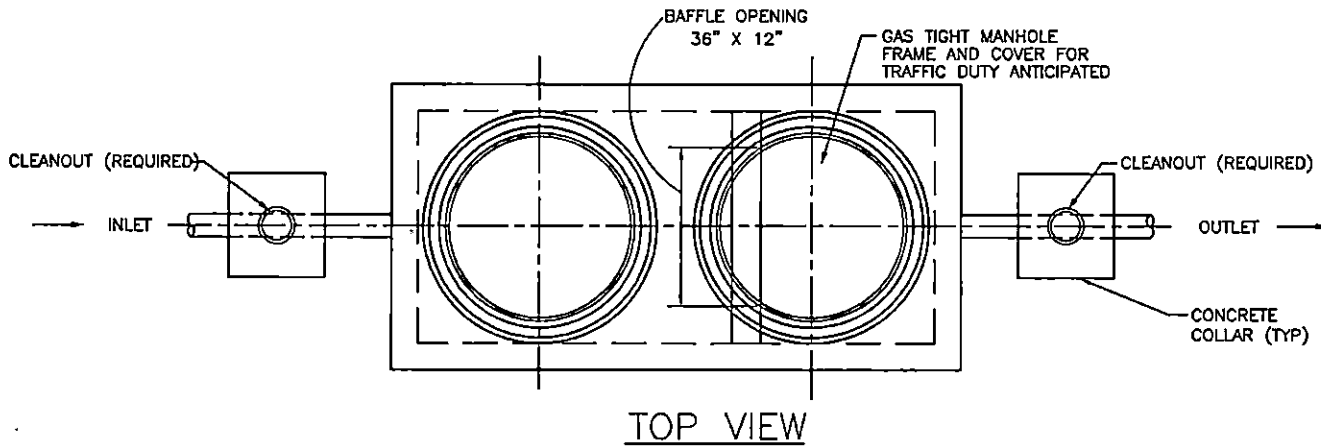
DIVISION OF ENGINEERING

SANITARY SEWER STREAM CROSSING AND STREAM BED RESTORATION DETAIL

STANDARD DRAWING NO. 240


APPROVAL:  9/22/17  
 URBAN COUNTY ENGINEER DATE  
 COMMISSIONER  9/22/17  
 DATE

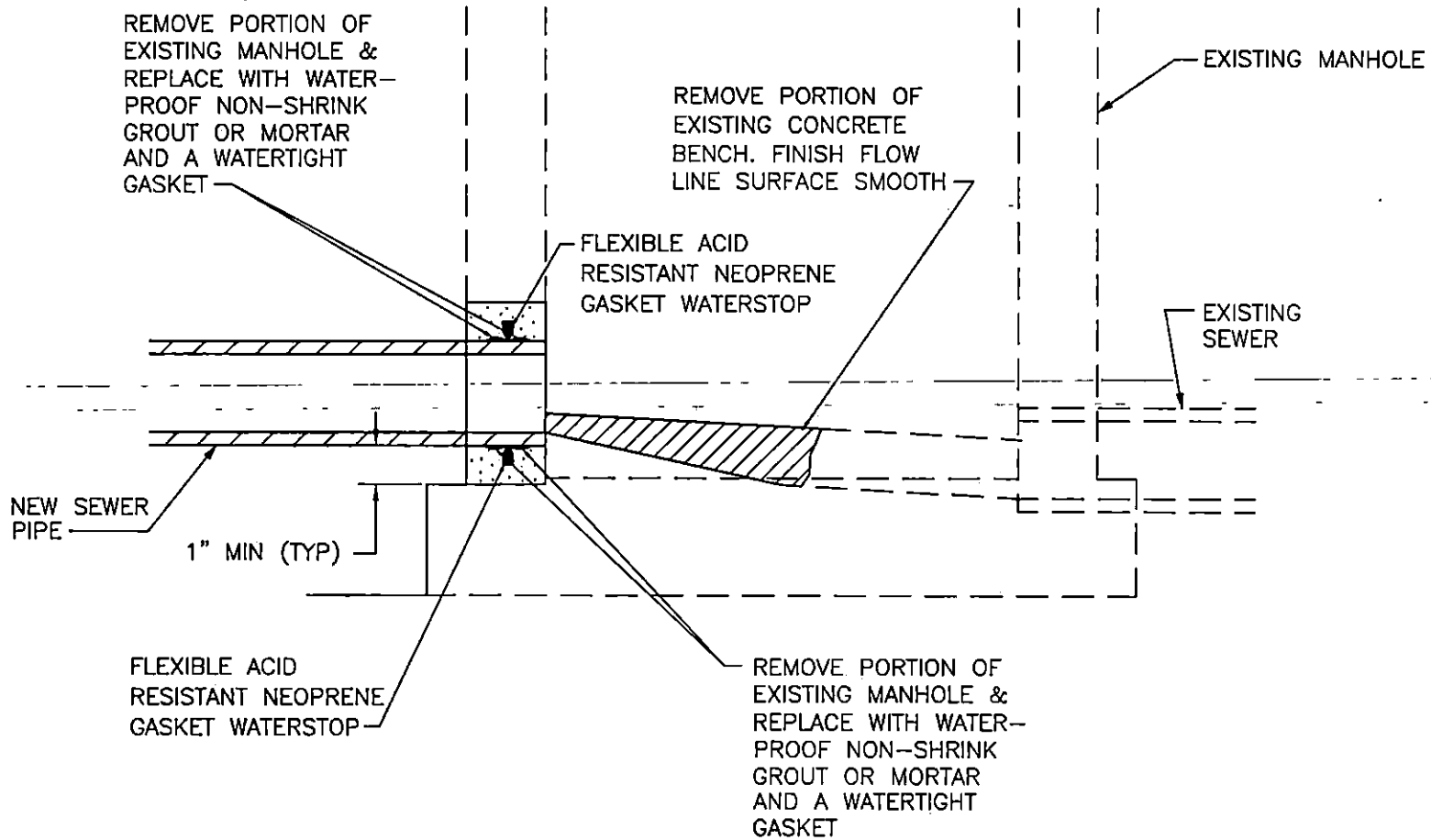




**GENERAL NOTES:**


1. THIS STRUCTURE IS TO BE ACCESSIBLE FOR MAINTENANCE OR INSPECTION WITH COVERS AND CLEANOUTS BROUGHT TO GRADE.
2. DESIGN CRITERIA SHALL BE HS-20 LOADING.
3. FLOW TO THE INTERCEPTOR SHALL EXCLUDE SANITARY SEWAGE AND SURFACE DRAINAGE.
4. DESIGN AND CAPACITY OF GREASE INTERCEPTOR TO BE CERTIFIED BY ENGINEER IN ACCORD WITH KENTUCKY STATE PLUMBING CODE AND REVIEWED FOR CAPACITY BY THE DIVISION OF WATER QUALITY PRIOR TO CONSTRUCTION.
5. MULTIPLE COMPARTMENT INTERCEPTORS ARE ACCEPTABLE.
6. THE MINIMUM CAPACITY OF INTERCEPTORS IS 1000 GALLONS.
7. PIPE CLEANOUT TEE SHALL BE THE SAME SIZE AS THE PIPE AND BE WITHIN 6' OF THE GREASE INTERCEPTOR ON THE OUTLET LINE. THE INLET LINE CLEANOUT IS OPTIONAL.
8. MANUFACTURER WILL PROVIDE GREASE TRAP WITH TWO(2) ACCESS POINTS AS SHOWN. PLUMBING CONTRACTOR TO INSTALL FIXTURES AS SHOWN.
9. DIAMETER OF PIPE IN GREASE INTERCEPTOR SHALL BE THE SAME DIAMETER AS THE INLET LATERAL PIPE.

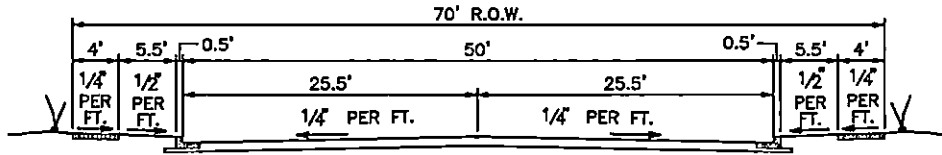
	<b>LEXINGTON</b>
DIVISION OF ENGINEERING	
GREASE INTERCEPTOR TYPICAL CONFIGURATION	
STANDARD DRAWING NO.	250
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



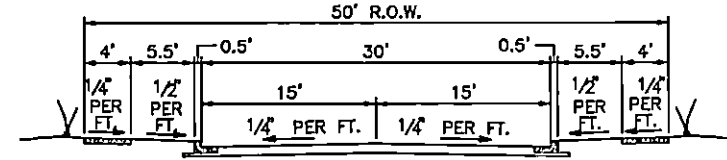
ALL HOLES CUT INTO SEWER MANHOLES SHALL BE CORE DRILLED.

SEWER CONNECTION TO EXISTING MANHOLE

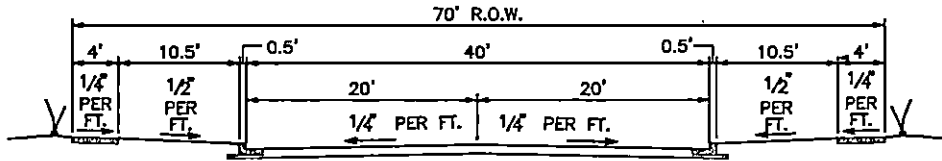
 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
SEWER CONNECTION TO EXISTING CONCRETE MANHOLE	
STANDARD DRAWING NO.	260
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17 DATE



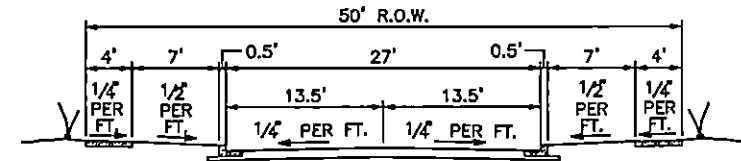
NON-RESIDENTIAL COLLECTOR



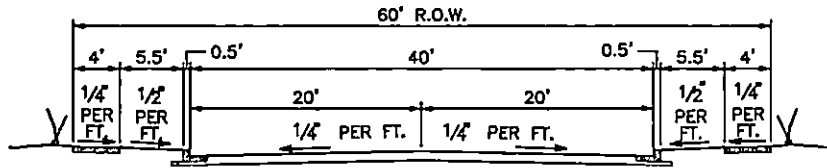
RESIDENTIAL CONTINUING LOCAL  
OR COMMERCIAL SERVICE



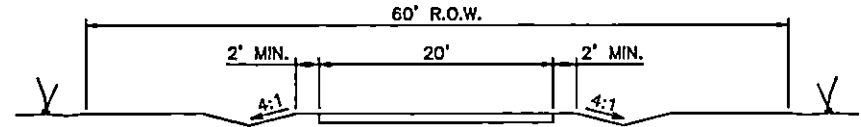
NON-RESIDENTIAL OR INDUSTRIAL COLLECTOR



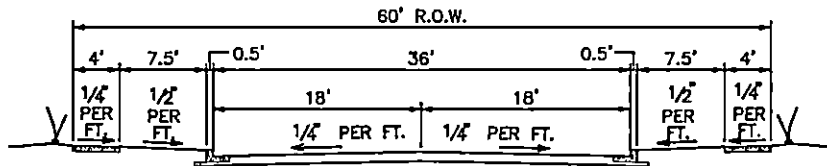
RESIDENTIAL CUL-DE-SAC  
AND CONTINUING LOCAL  
(SEE NOTE 3)



RESIDENTIAL COLLECTOR AND INDUSTRIAL LOCAL



RURAL LOCAL



RESIDENTIAL COLLECTOR  
(OBSOLETE) - USED TO COMPLETE EXISTING STREETS

**NOTES:**

1. SLOPES AND DRAINAGE DITCHES OUTSIDE THE R.O.W. SHALL BE APPROVED BY THE ENGINEER.
2. THE APPLICATIONS AND USES OF THE ABOVE TYPICAL SECTIONS SHALL BE IN ACCORDANCE WITH THE L.F.U.C.G. LAND SUBDIVISION REGULATIONS, ARTICLE 6.
3. PARKING RESTRICTED TO ONE SIDE OF ROADWAY.

NO.	DATE	REVISION DESCRIPTION	BY
01	06/21/18	UPDATE APPROVAL STATUS	TAL

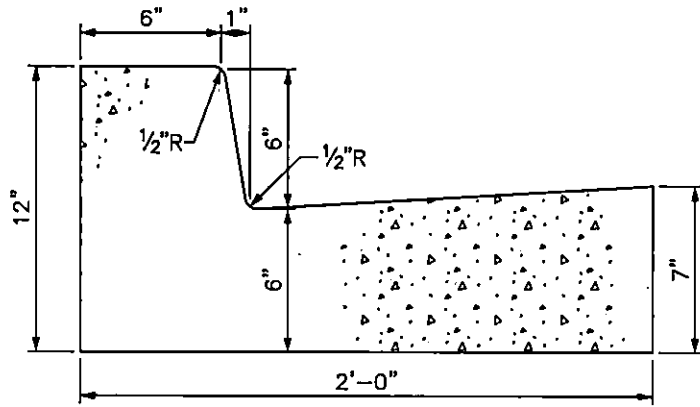


**LEXINGTON**

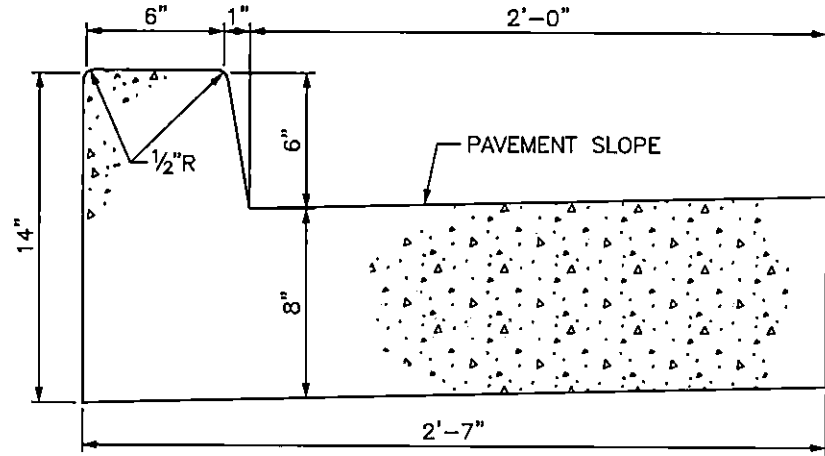
DIVISION OF ENGINEERING

TYPICAL STREET  
SECTIONS

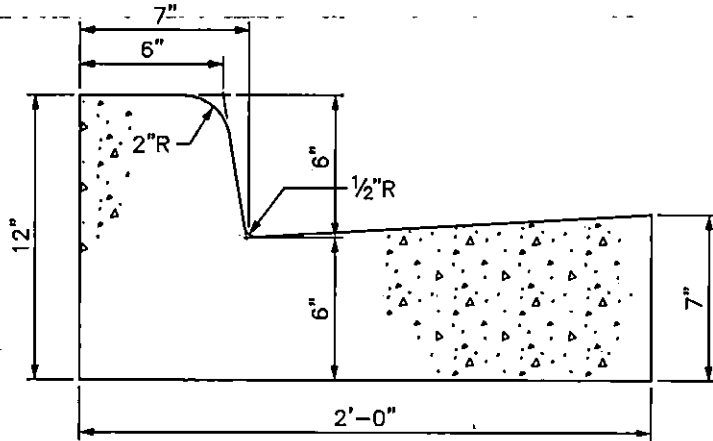
STANDARD DRAWING NO.	300
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



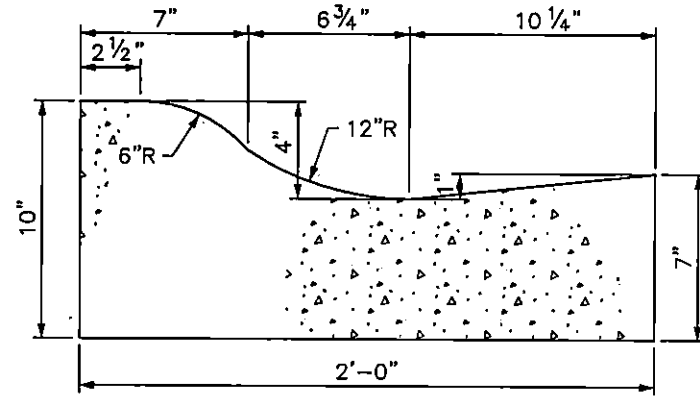
TYPE 1



TYPE 2



TYPE 3



TYPE 4

(RESIDENTIAL LOCAL STREETS ONLY)

NOTES:

1. CONCRETE SHALL BE KDOT CLASS "A".
2. SAWED CONTRACTION JOINTS SHALL BE CONSTRUCTED EVERY 20 FEET, WITH A MIN. DEPTH OF 3", IN ACCORDANCE WITH KDOT STANDARD SPECIFICATION.

3. FULL DEPTH EXPANSION JOINTS SHALL BE CONSTRUCTED AT ALL BREAKS IN ALIGNMENT, AT CONTACT WITH NEW OR EXISTING CONCRETE, AT ALL DRAINAGE INLETS, AT THE BEGINNING AND ENDING POINTS OF CURVES, AND NOT TO EXCEED 200' MAXIMUM SPACING FOR SLIP FORM APPLICATION AND 30' MAXIMUM SPACING FOR HAND PLACED.
4. ALL CONCRETE SHALL BE CURED WITH WHITE PIGMENTED MEMBRANE FORMING COMPOUND (AASHTO M 148, TYPE 2).

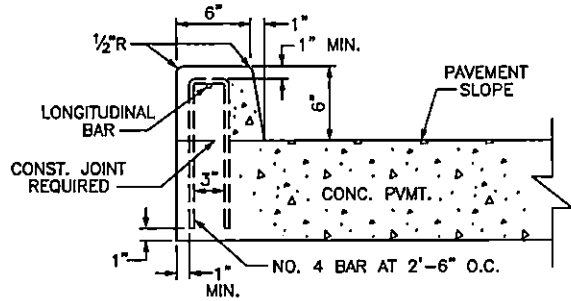


**LEXINGTON**

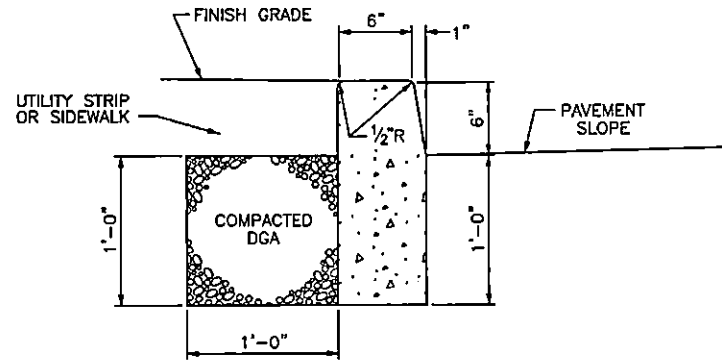
DIVISION OF ENGINEERING

CURB & GUTTER

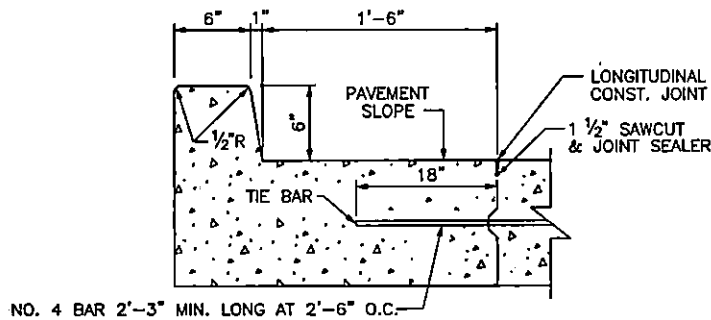
STANDARD DRAWING NO.	301
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



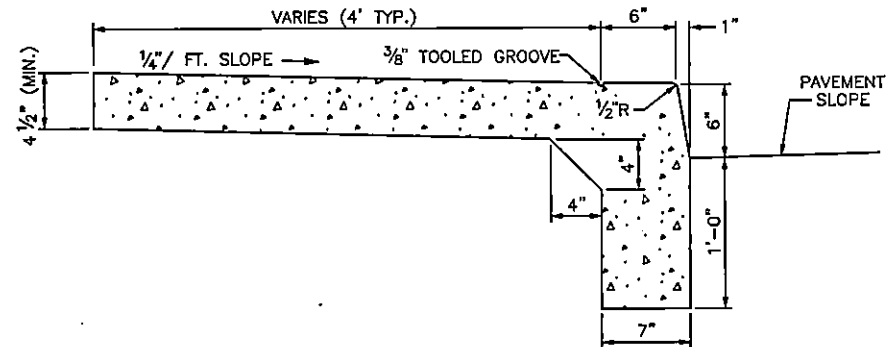
INTEGRAL CURB, TYPE 1



HEADER CURB



INTEGRAL CURB, TYPE 2




MONOLITHIC CURB AND SIDEWALK

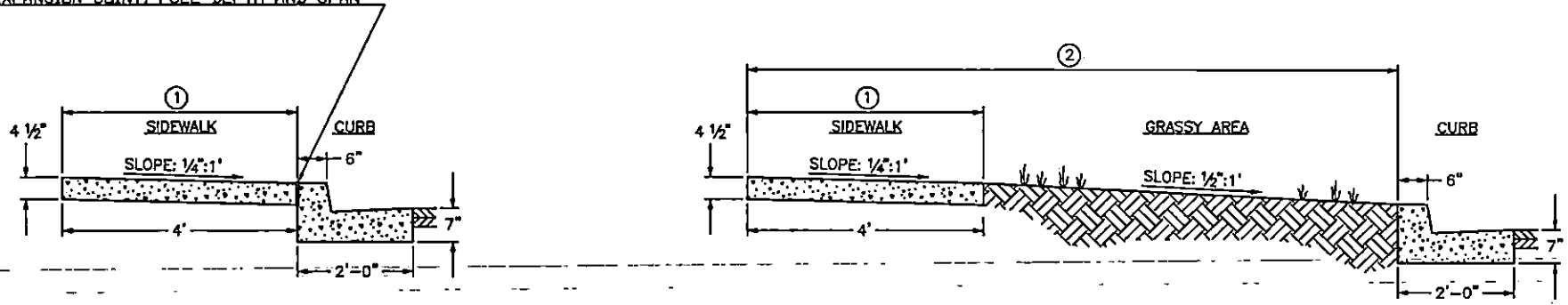
NOTES:

1. CONCRETE SHALL BE KDOT CLASS "A".
2. SAWED CONTRACTION JOINTS SHALL BE CONSTRUCTED EVERY 20 FEET, 3" MINIMUM DEPTH.
3. THE CONTRACTOR HAS THE OPTION OF CONSTRUCTING THE STANDARD INTEGRAL CURB AS DETAILED IN EITHER TYPE 1 OR 2. IF TYPE 2 IS CHOSEN A LONGITUDINAL CONSTRUCTION JOINT SHALL BE REQUIRED AND THE REMAINING PAVEMENT AND CURB SHALL BE CONSTRUCTED MONOLITHIC WITHOUT A HORIZONTAL CONSTRUCTION JOINT AND ACCOMPANYING REINFORCING STEEL (TYPE 1).

4. FULL DEPTH EXPANSION JOINTS SHALL BE CONSTRUCTED AT ALL BREAKS IN ALIGNMENT, AT ALL DRAINAGE INLETS AND AT THE BEGINNING AND ENDING POINTS OF CURVES.
5. ALL CONCRETE, EXCEPT BONDING SURFACES, SHALL BE CURED WITH WHITE PIGMENTED MEMBRANE FORMING COMPOUND (AASHTO M 148, TYPE 2).

	<b>LEXINGTON</b>
DIVISION OF ENGINEERING	
INTEGRAL CURB, HEADER CURB, MONOLITHIC CURB & SIDEWALK	
STANDARD DRAWING NO.	302
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17 DATE

EXPANSION JOINT, FULL DEPTH AND SPAN



SIDEWALK/CURB AND GUTTER

NOTES:

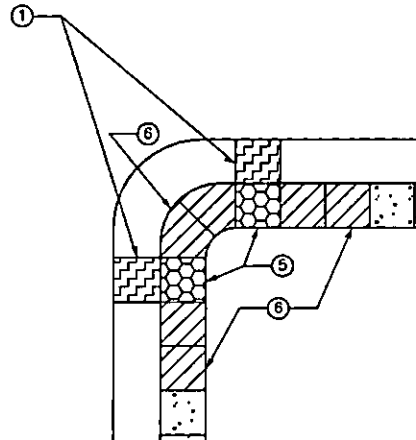
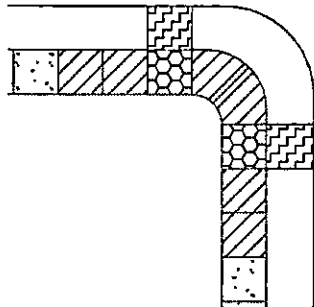
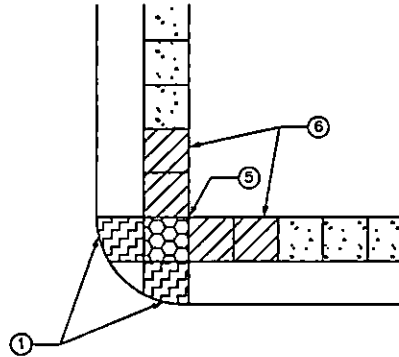
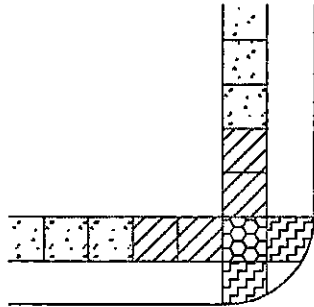
1. CONCRETE SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED ON A THOROUGHLY COMPACTED SUB-GRADE AND SHALL BE FOUR AND ONE HALF (4 1/2) INCHES IN THICKNESS AND A MINIMUM WIDTH OF FOUR (4) FEET. CONCRETE SHALL MEET THE REQUIREMENTS FOR CLASS "A" AND SHALL BE COATED WITH WHITE PIGMENTED CURING COMPOUND TYPE 2, ALL AS SPECIFIED IN KYTC SPECIFICATION, SECTION 823.02.
2. FULL DEPTH EXPANSION JOINTS SHALL BE PLACED AT CONTACT WITH NEW OR EXISTING CONCRETE, EXISTING CONCRETE, AT ABUTTING RIGID STRUCTURES OR FEATURES SUCH AS BUILDINGS, DRIVEWAYS, UTILITY POLES FIRE HYDRANTS, ECT. AND NOT TO EXCEED 200' MAXIMUM SPACING FOR SLIP FORM APPLICATION AND 32' FOR HAND PLACED. EXPANSION MATERIAL SHALL BE 1/2" ASPHALTIC MATERIAL OR APPROVED EQUAL MEETING KYTC 807.04.03.
3. CONTROL JOINTS SHALL BE PLACED AT INTERVALS EQUIVALENT TO THE SIDEWALK WIDTH, WITH A DEPTH OF 1/4 THE SIDEWALK THICKNESS.
4. THE SIDEWALKS SHALL BE PLACED ADJACENT TO THE STREET RIGHT-OF-WAY LINE. SLOPE TOWARD CURB SHALL BE ONE QUARTER (1/4) OF AN INCH TO THE FOOT. CONSTRUCTION IN EXISTING NEIGHBORHOODS SHALL REQUIRE THE CONTRACTOR TO MATCH EXISTING GRADE AND SIDEWALK WIDTH UNLESS SPECIFIED OTHERWISE BY THE DIVISION OF ENGINEERING.
5. SIDEWALK REPAIR FOR ANY CUTS MADE FOR UTILITY WORK REPLACEMENT SHALL BE FULL PANEL MATCHING THE ORIGINAL DIMENSIONS.

SHEET NOTES:

- ① NORMAL SIDEWALK WIDTH SHALL BE 4' UNLESS CHANGE IS AUTHORIZED BY URBAN COUNTY ENGINEER'S OFFICE.
- ② DISTANCE WILL VARY WITH ROAD CROSS-SECTION.

SIDEWALK/CURB AND GUTTER WITH GRASS UTILITY STRIP

<b>LEXINGTON</b>
DIVISION OF ENGINEERING
SIDEWALK CONSTRUCTION SPECIFICATIONS
STANDARD DRAWING NO. 303
APPROVAL:  9/22/17
URBAN COUNTY ENGINEER  DATE 9/22/17
COMMISSIONER  DATE



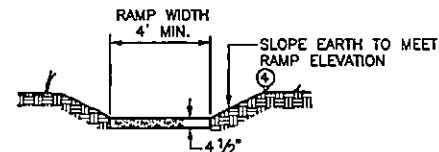
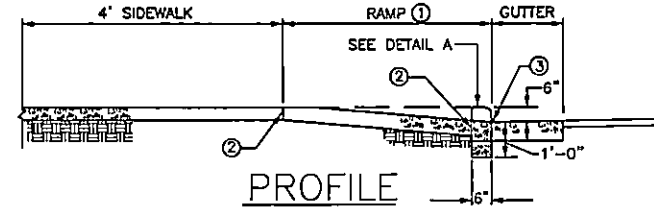
PLAN VIEW

**NOTES:**

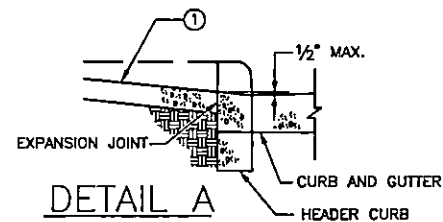
1. INLET LOCATIONS WILL VARY, DEPENDENT ON CROSSWALK AND RAMP LOCATION.
2. THE RAMP SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE, AND SHALL UTILIZE CAST IN PLACE REPLACEABLE TACTILE WARNING TILE, SUCH AS ADA SOLUTIONS, INC., ACCESS TILE TACTILE SYSTEMS, ARMOR-TILE HERCULITE OR APPROVED EQUAL TILE COLOR SHALL BE FEDERAL YELLOW.
3. THE NORMAL GUTTER LINE SHOULD BE MAINTAINED THROUGH THE RAMP.
4. RAMPS SHOULD BE LOCATED WITHIN MARKED LIMITS OF CROSSWALKS.
5. WHERE NO CURB EXISTS, STREET EDGE SHALL BE SAW CUT, OR AS DIRECTED BY L.F.U.C.G. ENGINEER.
6. MAXIMUM CROSS SLOPE OF SIDEWALK 1/4": 1'.
7. SIDEWALK REPAIR FOR ANY CUTS MADE FOR UTILITY WORK REPLACEMENT SHALL BE FULL PANEL MATCHING THE ORIGINAL DIMENSIONS.

**SHEET NOTES:**

- ① MAXIMUM RAMP SLOPE 1":1'.
- ② 1/2" EXPANSION JOINT AT BACK OF CURBLINE AND SIDEWALK LINE, FULL DEPTH.
- ③ NO BUMP PERMITTED.
- ④ SLOPE VARIES UNIFORMLY TO A MAXIMUM OF 1":1' AT GUTTER LINE.
- ⑤ MAXIMUM CROSS SLOPE OF LANDING 1/4": 1' IN ALL DIRECTIONS.
- ⑥ MAXIMUM LONGITUDINAL SLOPE 1/2": 1', OR ALONG THE CENTERLINE GRADE OF THE ADJACENT ROADWAY.



CROSS SECTION



DETAIL A

NO.	DATE	REVISION DESCRIPTION	BY
01	06/05/18	UPDATE PLAN VIEW NOTE	TAL



**LEXINGTON**

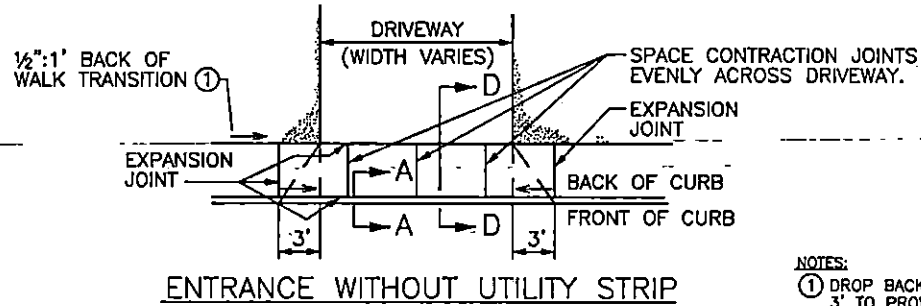
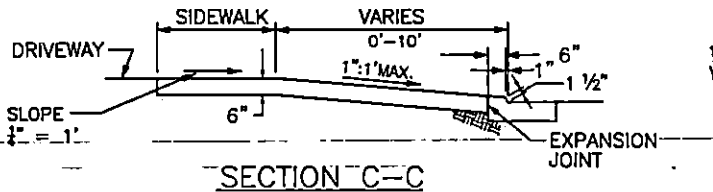
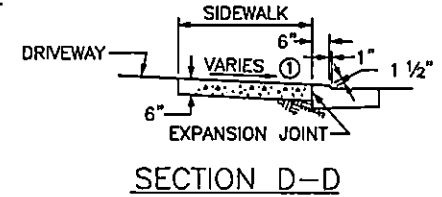
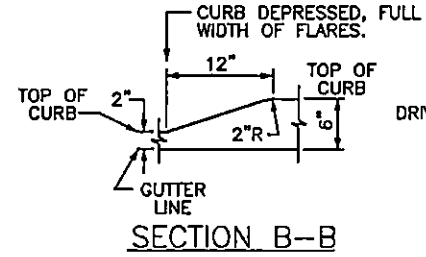
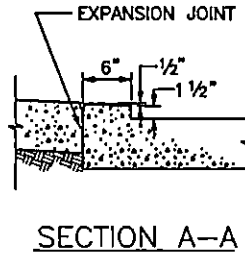
DIVISION OF ENGINEERING

SIDEWALK  
RAMP

STANDARD DRAWING NO.	304
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

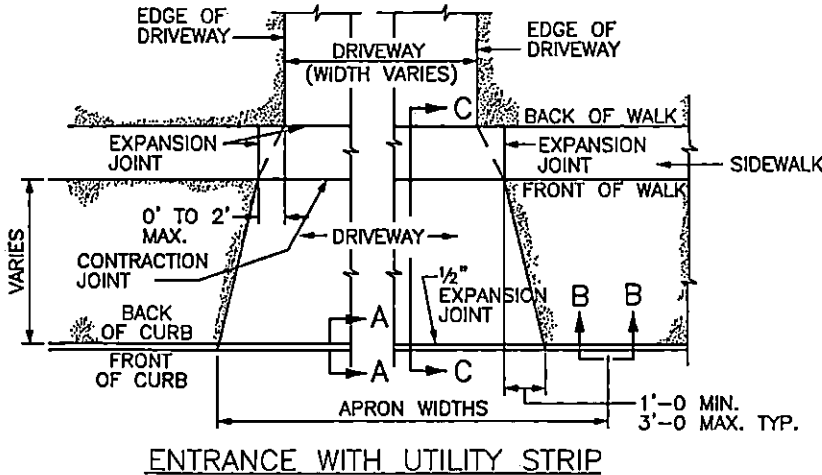
**MAXIMUM ALLOWABLE APRON AND DRIVEWAY WIDTHS**

CLASSIFICATION	DRIVEWAY	APRON
SINGLE RESIDENTIAL	12'	18'
DOUBLE OR JOINT RESIDENTIAL	20'	26'



STREET WITH PARKING LANE

STREET WITHOUT PARKING LANE



**NOTES:**

- ① DROP BACK OF SIDEWALK GRADE 1/2" OVER 3' TO PROVIDE A MAXIMUM SLOPE OF 1":1'.
- PROVIDE A SAWED JOINT ALONG CENTER LINE OF APRON.
- MAXIMUM DROP AT BACK OF SIDEWALK SHALL NOT EXCEED 1/2".
- MAXIMUM CROSS SLOPE ON SIDEWALK SHALL NOT EXCEED 1/4" = 1'.
- MAXIMUM SLOPE ON APRON SHALL NOT EXCEED 1":1' (8.33%).
- ENTIRE APRON FROM BACK OF CURB TO BACK OF SIDEWALK SHALL BE CONSTRUCTED WITH A SINGLE POUR.
- ALL EXPANSION JOINTS SHALL BE FULL DEPTH.

**NOTE:**

FOR USE WITH 6" HEADER CURB OR 6" CURB AND GUTTER

UTILITY STRIP WIDTH	DROP BACK OF 4' SIDEWALK	SIDEWALK SLOPE	SLOPE ON APRON
0'	1 1/2"	7.29%	N/A
2'	1 1/2"	5.21%	8.33%
4'	1 1/2"	3.12%	8.33%
5'	1 1/2"	2.08%	8.33%
6'	1"	2.08%	8.33%
8'	0"	2.08%	8.33%
10'	0"	2.08%	7.50%

BASED ON UTILITY STRIP WITH 1/2" 1' CROSS SLOPE

UTILITY STRIP WIDTH	DROP BACK OF 4' SIDEWALK	SIDEWALK SLOPE	SLOPE ON APRON
0'	1 1/2"	7.29%	N/A
2'	1 1/2"	4.17%	8.33%
3'	1 1/2"	2.60%	8.33%
4'	1"	2.08%	8.33%
6'	0"	2.08%	7.64%
8'	0"	2.08%	6.25%
10'	0"	2.08%	5.42%

BASED ON UTILITY STRIP WITH 1/4" 1' CROSS SLOPE



DIVISION OF ENGINEERING

RESIDENTIAL ENTRANCE DETAILS

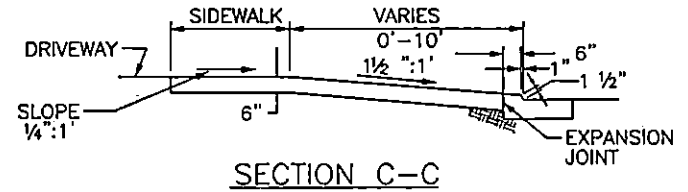
STANDARD DRAWING NO. 307-1

APPROVAL: *[Signature]* 9/22/17  
 URBAN COUNTY ENGINEER *[Signature]* 9/22/17  
 COMMISSIONER *[Signature]* DATE

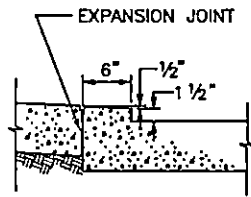


### MAXIMUM ALLOWABLE APRON AND DRIVEWAY WIDTHS

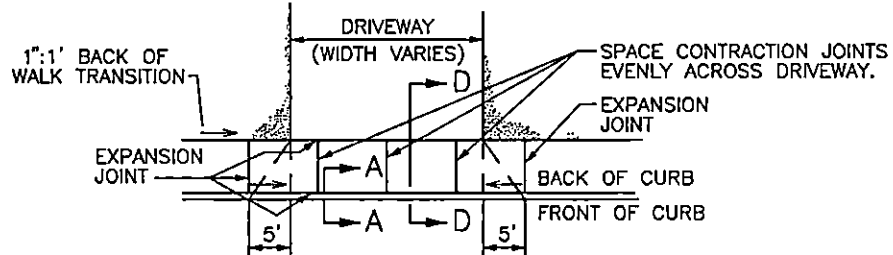
CLASSIFICATION	DRIVEWAY	STANDARD APRON	ALTERNATE APRON
NON-RESIDENTIAL	30'	5' STRAIGHT FLARE=40' CURB CUT	10' RADIAL FLARE=50' CURB CUT
COMMERCIAL LOADING	30'	15' STRAIGHT FLARE=60' CURB CUT	20' RADIAL FLARE=70' CURB CUT
INDUSTRIAL	40'	20' STRAIGHT FLARE=80' CURB CUT	25' RADIAL FLARE=90' CURB CUT



FRONT OF SIDEWALK ELEVATION DETERMINED BY ADDING 1/2" : 1' ACROSS UTILITY STRIP FROM TOP OF CURB. IF COMING OFF 1 1/2" LIP ADD ANOTHER 4 1/2" TO DETERMINE ELEVATION AT FRONT OF SIDEWALK.



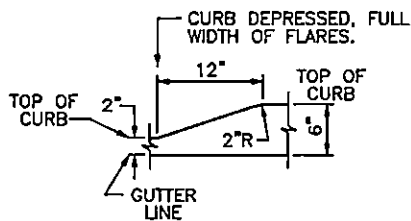
SECTION A-A



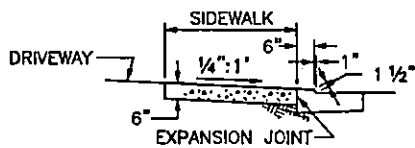
ENTRANCE WITHOUT UTILITY STRIP

**NOTES:**

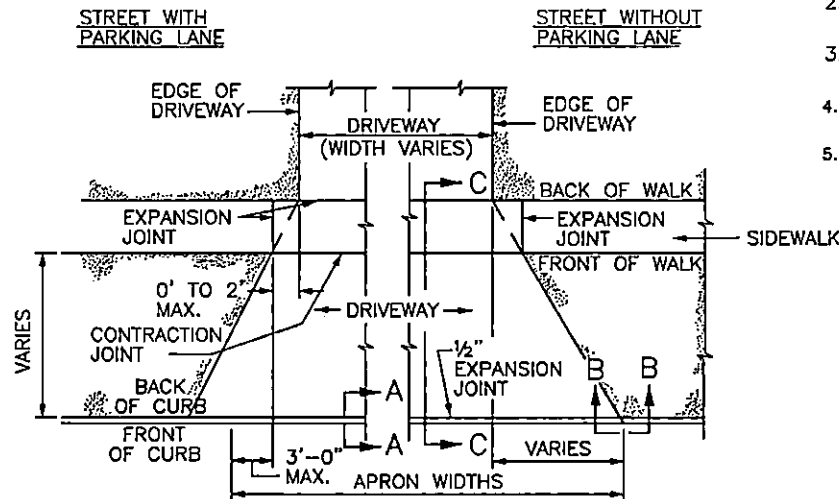
1. PROVIDE A SAWED JOINT ALONG CENTER LINE OF APRON.
2. MAXIMUM CROSS SLOPE ON SIDEWALK SHALL NOT EXCEED 1/4" : 1'
3. MAXIMUM SLOPE ON APRON SHALL NOT EXCEED 1 1/2" : 1'.
4. NO CATCH BASINS WILL BE PUT IN APRONS.
5. ALL EXPANSION JOINTS SHALL BE FULL DEPTH.




SECTION B-B



SECTION D-D



ENTRANCE WITH UTILITY STRIP




**LEXINGTON**


DIVISION OF ENGINEERING

COMMERCIAL ENTRANCE DETAILS

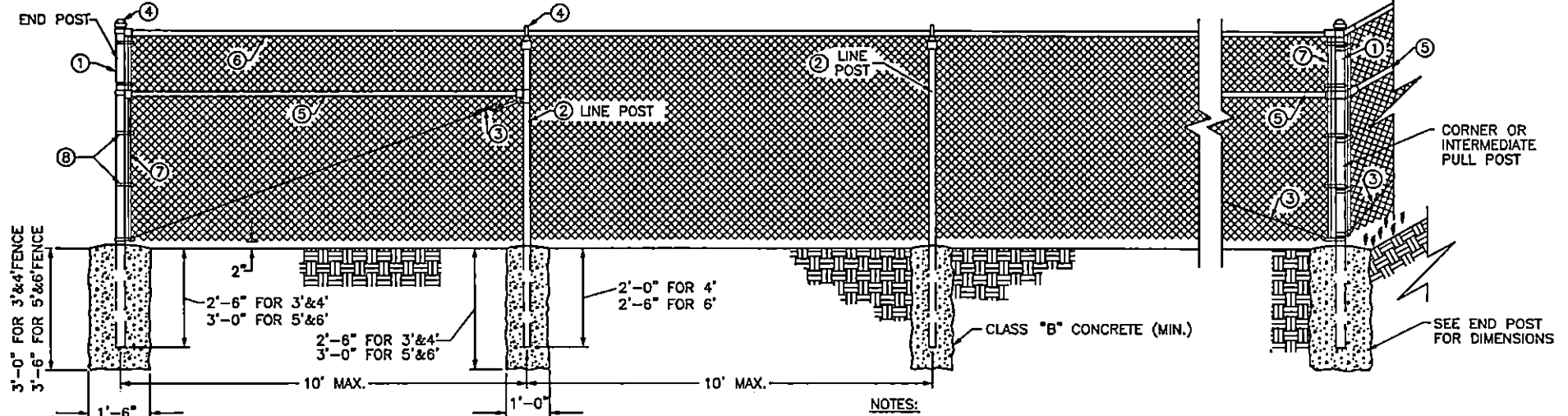
---

STANDARD DRAWING NO. 307-2

APPROVAL:  9/22/17

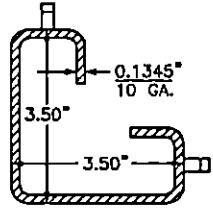
URBAN COUNTY ENGINEER  DATE 9/22/17

COMMISSIONER DATE

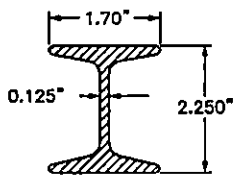


**NOTES:**

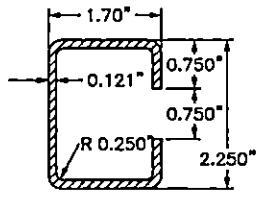
1. ALL POSTS SHALL BE SET IN CONCRETE TO THE DIMENSIONS AS INDICATED ON THIS DRAWING.
2. 3' HIGH FENCE SHALL HAVE 3' FABRIC HEIGHT. 4' HIGH FENCE SHALL HAVE 4' FABRIC HEIGHT. 5' HIGH FENCE SHALL HAVE 5' FABRIC HEIGHT. 6' HIGH FENCE SHALL HAVE 6' FABRIC HEIGHT.
3. BRACE BANDS SHALL BE 7/8" X 1/8" GALVANIZED STEEL 5/16" X 1/4" CARRIAGE BOLT.
4. POST CAPS AND SOCKET TYPE BRACE END CONNECTIONS SHALL BE GALVANIZED MALLEABLE IRON OR OTHER TYPE AS APPROVED BY THE ENGINEER. THEY SHALL BE DESIGNED IN A MANNER TO EXCLUDE MOISTURE FROM INSIDE POSTS AND RAILS.
5. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL-ASTM A-120 SHALL GOVERN.
6. STRUCTURAL SHAPES SHALL CONFORM TO STD. SPEC. 816.07.01 EXCEPT YIELD SHALL BE A MIN. 45,000 P.S.I.
7. INDISCRIMINATE MIXING OF POSTS WILL NOT BE PERMITTED.
8. CHAIN LINK FENCE FABRIC SHALL BE 0.148 INCH NOMINAL DIAMETER (NO. 9 GAGE) WIRE WOVEN IN 2 INCH MESH.



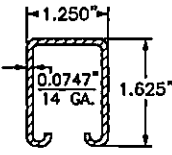
TERMINAL POST & CORNER POST



LINE POST H-COLUMN



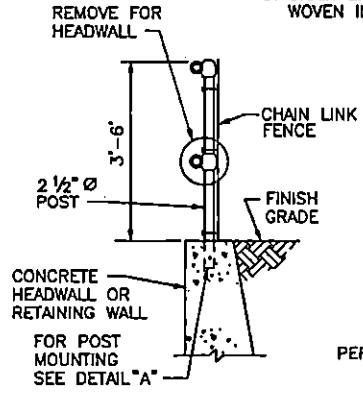
LINE POST HEAVY "C" ROLL FORM



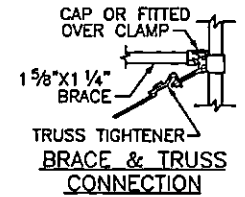
TOP & BRACE RAIL

**LEGEND-(ALTERNATES)**

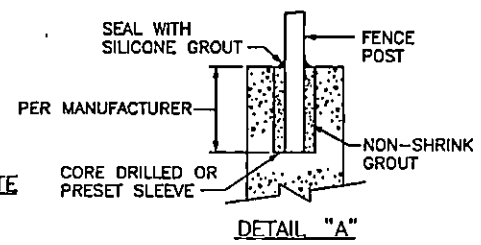
	TUBULAR	ROLL FORMED
①	2 1/2" O.D. @ 3.65#/L.F.	3.5"X3.5" @ 5.14#/L.F.
②	2" O.D. @ 2.72#/L.F.	2.250" H-COL @ 3.26#/L.F. OR 2.250" C-COL @ 2.64#/L.F.
③	3/8" Ø TRUSS ROD & TIGHTENER	0.375" Ø TRUSS ROD & TIGHTENER
④	APPROVED CAPS	NOT REQUIRED
⑤	1 5/8" BRACE @ 2.27#/L.F.	1.250"X1.625" @ 1.35#/L.F.
⑥	1 5/8" O.D. @ 2.27#/L.F.	1.250"X1.625" @ 1.35#/L.F.
⑦	3/16" X 3/4" FLAT STRETCHER BAR	NOT REQUIRED
⑧	BRACE BAND & TENSION BAND	NOT REQUIRED




**CHAIN LINK FENCE MOUNTED TO CONCRETE HEADWALL OR RETAINING WALL**



**BRACE & TRUSS CONNECTION**



**DETAIL "A"**

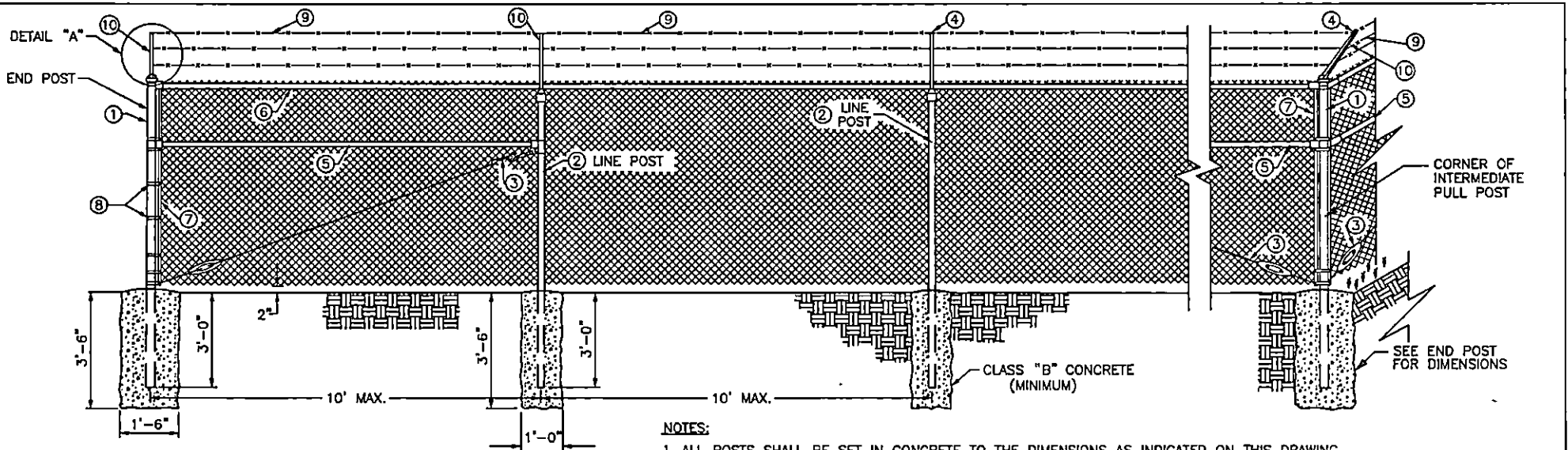


**LEXINGTON**

DIVISION OF ENGINEERING

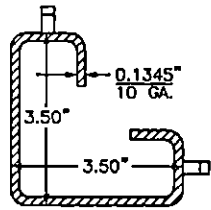
CHAIN LINK FENCE  
3'-6'

STANDARD DRAWING NO.	308
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

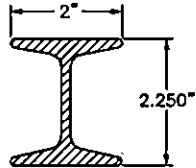


**NOTES:**

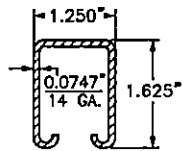
1. ALL POSTS SHALL BE SET IN CONCRETE TO THE DIMENSIONS AS INDICATED ON THIS DRAWING.
2. A 1 5/8" O.D. AT 2.27 LB. PER L.F. OR 1 1/4" X 1 5/8" ROLL FORMED SECTION AT 1.35 LB. PER L.F. BOTTOM RAIL SHALL BE REQUIRED AROUND ALL UTILITY INSTALLATIONS AND AT OTHER LOCATIONS DESIGNATED BY THE ENGINEER.
3. 8' HIGH FENCE SHALL HAVE 7' FABRIC HEIGHT. 9' HIGH FENCE SHALL HAVE 8' FABRIC HEIGHT. 10' HIGH FENCE SHALL HAVE 9' FABRIC HEIGHT. 11' HIGH FENCE SHALL HAVE 10' FABRIC HEIGHT. 12' HIGH FENCE SHALL HAVE 11' FABRIC HEIGHT.
4. BRACE BAND SHALL BE 7/8" X 1/8" GALVANIZED STEEL WITH 5/16" X 1/4" CARRIAGE BOLTS. POST CAPS AND SOCKET TYPE BRACE END CONNECTION SHALL BE GALVANIZED MALLEABLE IRON OR OTHER TYPE AS APPROVED BY THE ENGINEER. THEY SHALL BE DESIGNED IN A MANNER TO EXCLUDE MOISTURE FROM INSIDE POSTS AND RAILS.
5. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL - ASTM A-120 SHALL GOVERN.
6. CHAIN LINK FENCE FABRIC SHALL BE 0.148 INCH NOMINAL DIAMETER (NO.9 GAGE) WIRE WOVEN IN 2 INCH MESH.



TERMINAL POST & CORNER POST



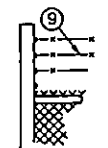
LINE POST



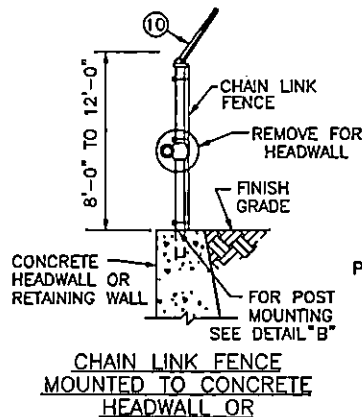
TOP & BRACE RAIL

**LEGEND-(ALTERNATES)**

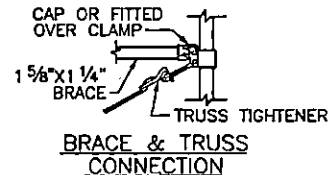
	TUBULAR	ROLL FORMED
①	2 1/2" O.D. @ 3.65#/L.F.	3.5" X 3.5" @ 5.14#/L.F.
②	2" O.D. @ 2.72#/L.F.	2.250" H-COL @ 3.26#/L.F. OR 2.250" C-COL @ 2.64#/L.F.
③	3/8" Ø TRUSS ROD & TIGHTENER	0.375" Ø TRUSS ROD & TIGHTENER
④	APPROVED CAPS	NOT REQUIRED
⑤	1 5/8" BRACE @ 2.27#/L.F.	1.250" X 1.625" @ 1.35#/L.F.
⑥	1 5/8" O.D. @ 2.27#/L.F.	1.250" X 1.625" @ 1.35#/L.F.
⑦	3/16" X 3/4" FLAT STRETCHER BAR	NOT REQUIRED
⑧	BRACE BAND & TENSION BAND	NOT REQUIRED
⑨	BARBED WIRE	BARBED WIRE
⑩	BARBED WIRE ARMS	BARBED WIRE ARMS



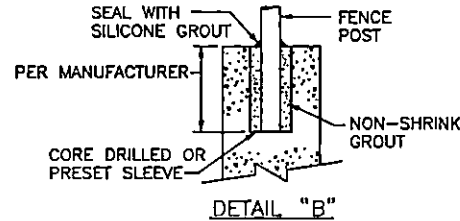
**DETAIL "A"**  
ROLL FORMED




**CHAIN LINK FENCE MOUNTED TO CONCRETE HEADWALL OR**



**BRACE & TRUSS CONNECTION**



**DETAIL "B"**



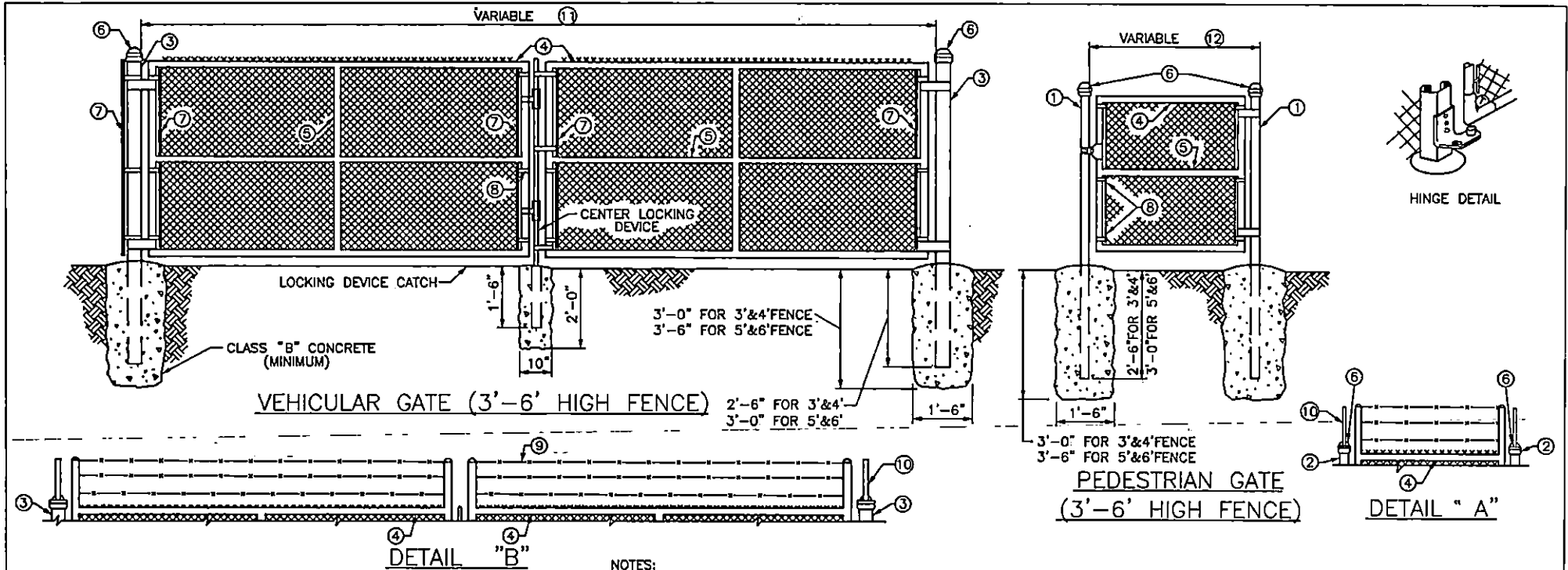
**LEXINGTON**

DIVISION OF ENGINEERING

CHAIN LINK FENCE  
8'-12'

STANDARD DRAWING NO. 309

APPROVAL: *[Signature]* 9/22/17  
URBAN COUNTY ENGINEER DATE  
COMMISSIONER *[Signature]* 9/22/17 DATE



**NOTES:**


1. ALL POSTS SHALL BE SET IN CONCRETE TO THE DIMENSIONS AS INDICATED ON THIS DRAWING.
2. VEHICULAR AND PEDESTRIAN GATES SHALL HAVE HEAVY PRESSED STEEL CORNERS SECURELY RIVETED OR SHALL BE MACHINE NOTCHED, AND ELECTRICALLY WELDED SO AS TO BE RIGID AND WATER TIGHT; AND EQUIPPED WITH PADLOCKING DEVICE AND GROUND STOP.
3. ALL WELDED JOINTS SHALL BE CLEANED AND PAINTED WITH TWO (2) COATS OF ALUMINUM PAINT.
4. 3' HIGH GATES SHALL HAVE 3' FABRIC HEIGHT. 4' HIGH GATES SHALL HAVE 4' FABRIC HEIGHT. 5' HIGH GATES SHALL HAVE 5' FABRIC HEIGHT. 6' HIGH GATES SHALL HAVE 6' FABRIC HEIGHT. 8' HIGH GATES SHALL HAVE 7' FABRIC HEIGHT. 9' HIGH GATES SHALL HAVE 8' FABRIC HEIGHT. 10' HIGH GATES SHALL HAVE 9' FABRIC HEIGHT. 11' HIGH GATES SHALL HAVE 10' FABRIC HEIGHT. 12' HIGH GATES SHALL HAVE 11' FABRIC HEIGHT.
5. SEE DETAIL "A" FOR BARBED WIRE INSTALLATION ON 8' TO 12' HIGH PEDESTRIAN GATES.
6. SEE DETAIL "B" FOR BARBED WIRE INSTALLATION ON 8' TO 12' HIGH VEHICULAR GATES.
7. THE CONTRACTOR IS NOT TO ORDER GATES UNTIL THEIR NECESSITY AND LOCATION HAVE BEEN CERTIFIED BY THE ENGINEER.
8. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL - ASTM A-120 SHALL GOVERN.
9. CHAIN LINK FENCE FABRIC SHALL BE 0.148 INCH NOMINAL DIAMETER (NO.9 GAGE) WIRE WOVEN 2 INCH MESH.

**LEGEND - (ALTERNATES)**

	TUBULAR	ROLL FORMED
①	END POST 2 1/2" O.D. @ 3.65#/L.F.	3 1/2"x3 1/2" @ 5.14#/L.F.
②	END POST 3" O.D. @ 3.65#/L.F.	3 1/2"x3 1/2" @ 5.14#/L.F.
③	4" O.D. @ 9.1#/L.F. GATE POST	NO ALTERNATE
④	2" O.D. @ 2.72#/L.F. GATE FRAME	NO ALTERNATE
⑤	1 5/8" O.D. @ 2.27#/L.F.	NO ALTERNATE
⑥	APPROVED CAPS	NOT REQUIRED
⑦	3/8"x5/8" FLAT STRETCHER BAR	NOT REQUIRED
⑧	BRACE BAND & TENSION BAND	NOT REQUIRED
⑨	BARBED WIRE	BARBED WIRE
⑩	BARBED WIRE ARMS	BARBED WIRE ARMS

① 6' TO 13' WIDTH FOR SINGLE GATE OR 12' TO 26' WIDTH FOR DOUBLE GATE.

② 4' TO 6' WIDTH

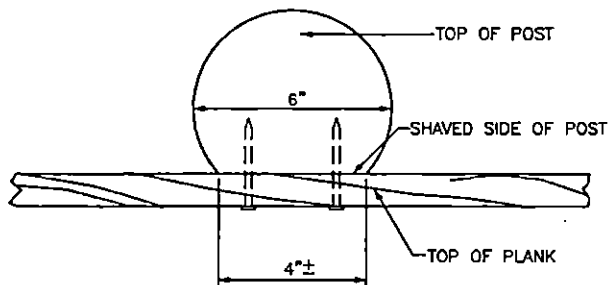
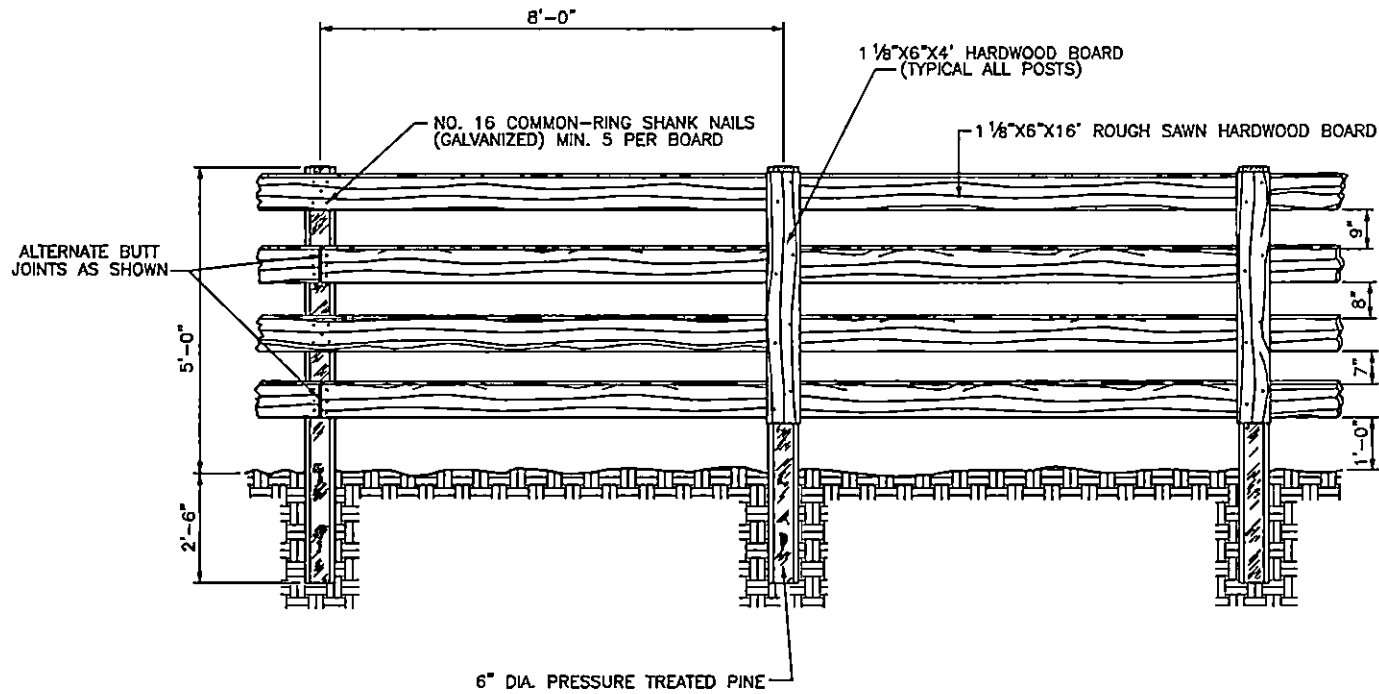


**LEXINGTON**

DIVISION OF ENGINEERING

CHAIN LINK GATE

STANDARD DRAWING NO.	310
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17
	DATE



**NOTES:**

1. POSTS ARE TO BE DRIVEN 2'-6" INTO GROUND AND TOPS CUT AT AN ANGLE TO DRAIN WATER.
2. FENCE SHALL BE PAINTED BLACK OR WHITE WITH PAINT AND APPLICATION RATE AS APPROVED BY THE ENGINEER.
3. HARDWOODS APPROVED ARE RED OAK, WHITE OAK, AND POPLAR.

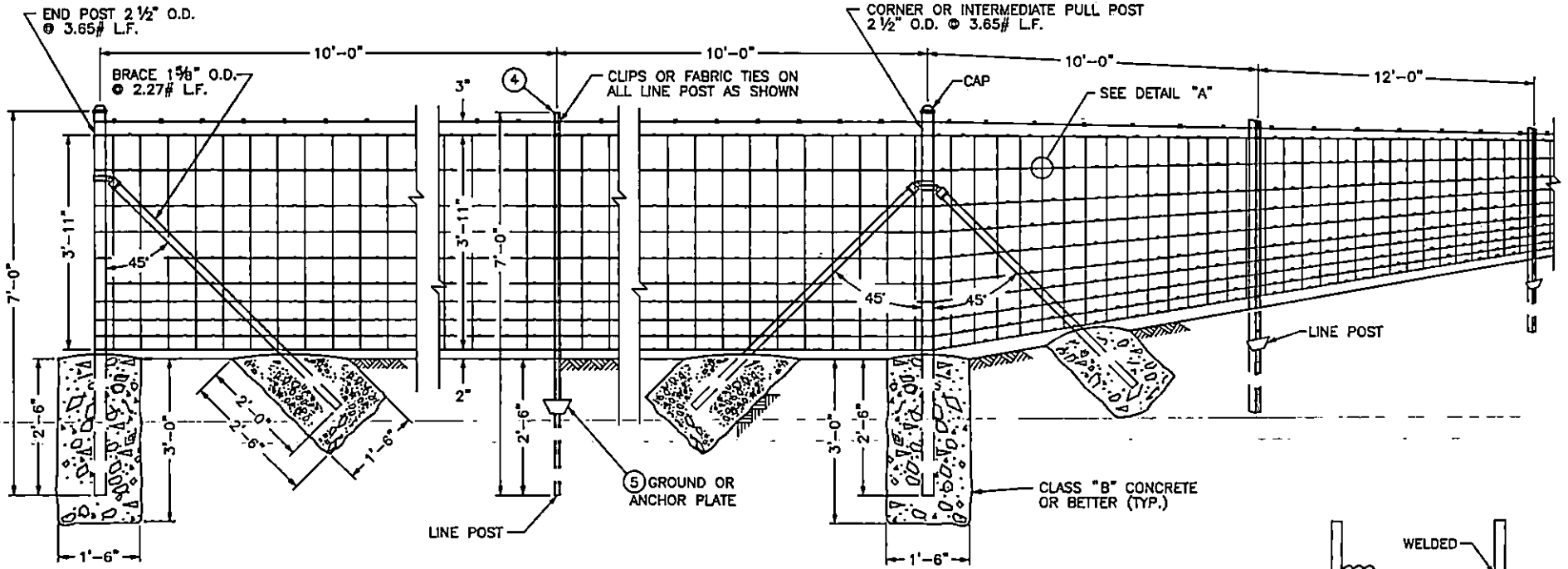


**LEXINGTON**

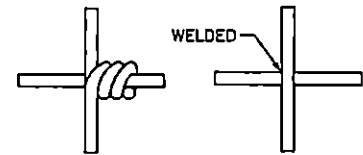
DIVISION OF ENGINEERING

PLANK FENCE

STANDARD DRAWING NO.	311
APPROVAL:	
URBAN COUNTY ENGINEER	9/22/17
COMMISSIONER	DATE

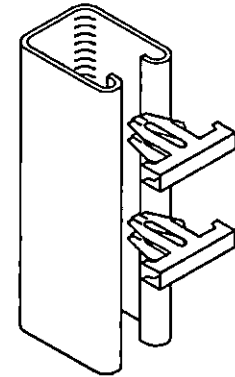


**RIGHT-OF-WAY FENCE**



ALTERNATE METHODS OF SECURING VERTICAL STAY WIRE TO THE HORIZONTAL WIRE OF THE FABRIC.

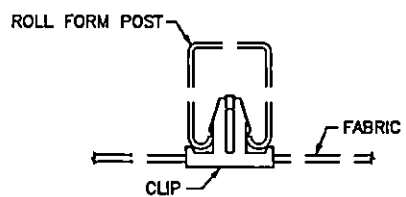
**DETAIL "A"**



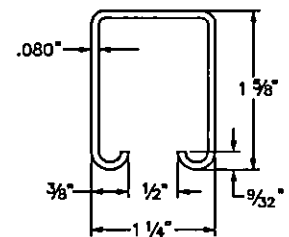
**ISOMETRIC EXPLODED VIEW OF ROLL FORM POST AND CLIPS**  
CLIPS SHALL BE SPRING STEEL ALUMINUM - FINISHED

**NOTES:**


1. WOVEN-WIRE USED FABRIC IN RIGHT-OF-WAY FENCE SHALL BE EITHER ALUMINUM-COATED STEEL NO. 1047-6-9 OR ZINC-COATED STEEL NO. 1047-6-9.
2. ALL FENCE FITTINGS SHALL COMPLY WITH ASTM F 626.
3. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL - ASTM F 1083 SHALL GOVERN.
- ④ STUDDED "T" POST AT 1.33 LBS. PER FOOT.  
- OR -  
ROLL FORM POST AT 1.35 LBS. PER FOOT. (SEE DETAIL)
- ⑤ NOT REQUIRED FOR ROLL FORM POST.

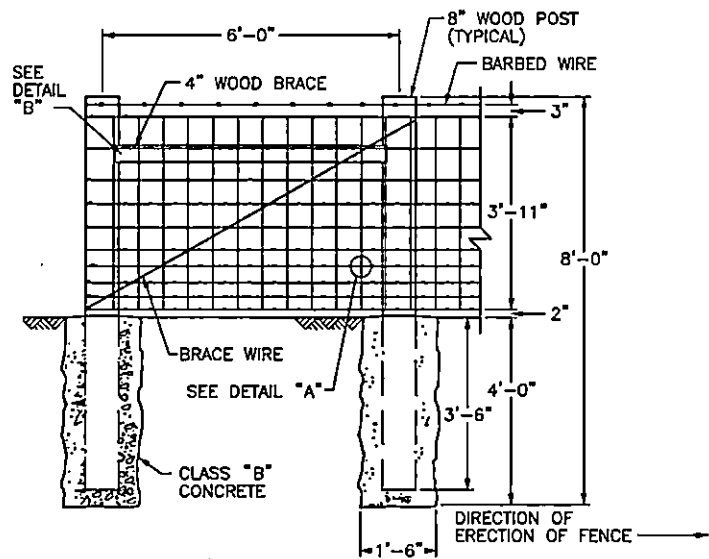


**PLAN VIEW OF CLIP INSTALLED IN ROLL FORM POST**

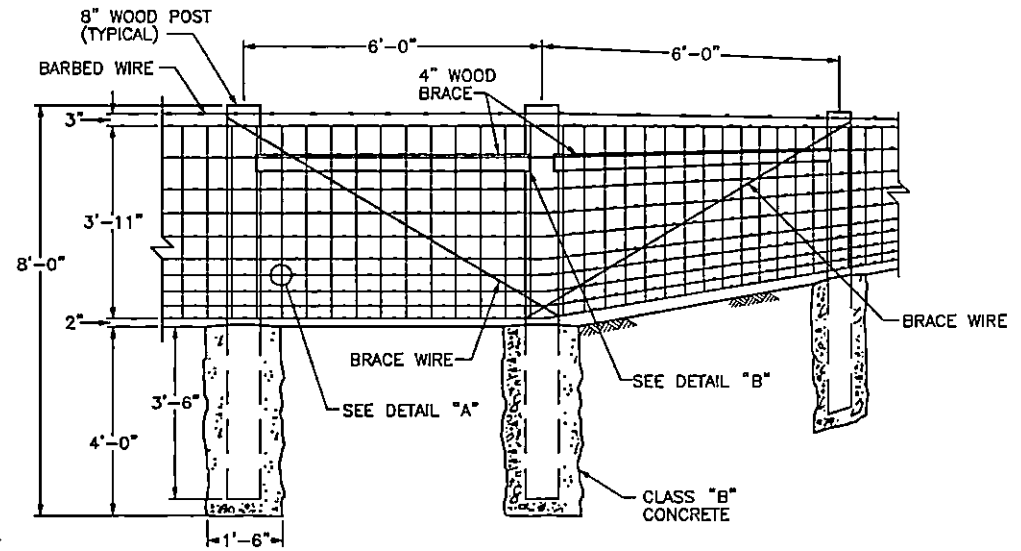


**PLAN VIEW OF ROLL FORM POST**

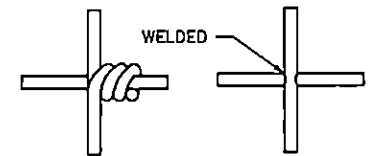
 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
WOVEN WIRE RIGHT-OF-WAY FENCE TYPE 1	
STANDARD DRAWING NO.	312
APPROVAL	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17 DATE



PULL OR END POST ASSEMBLY

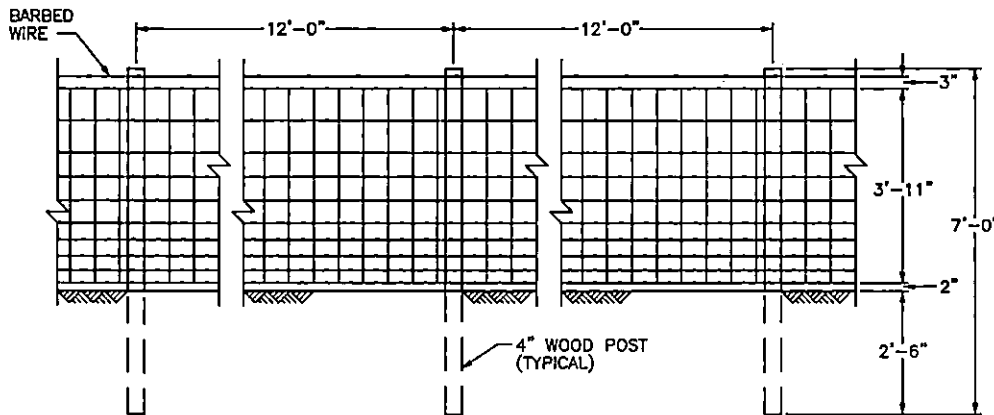


CORNER POST ASSEMBLY

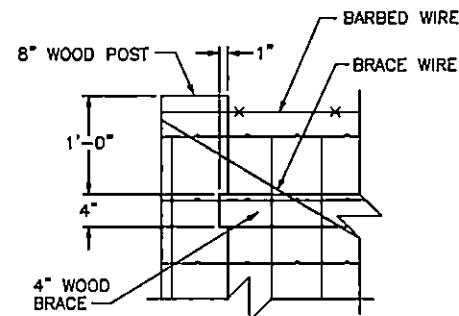


ALTERNATE METHODS OF SECURING VERTICAL STAY WIRE TO THE HORIZONTAL WIRE OF THE FABRIC.

DETAIL "A"




LINE POST

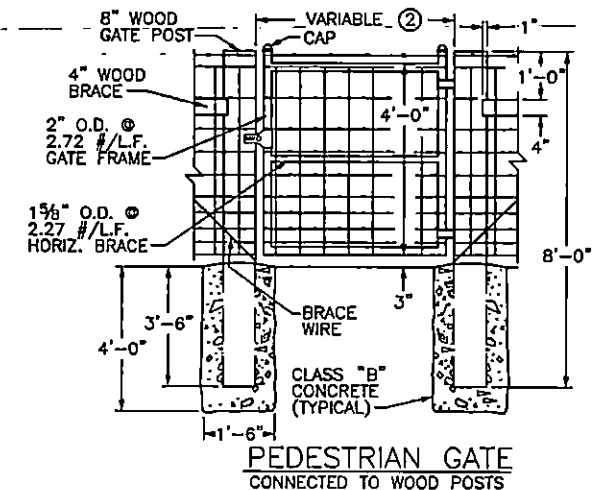
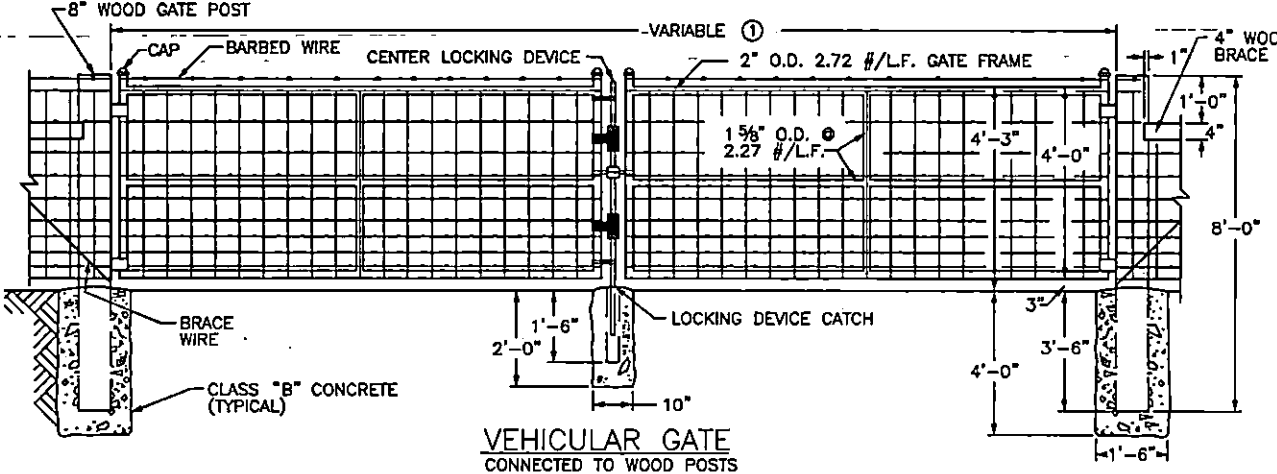
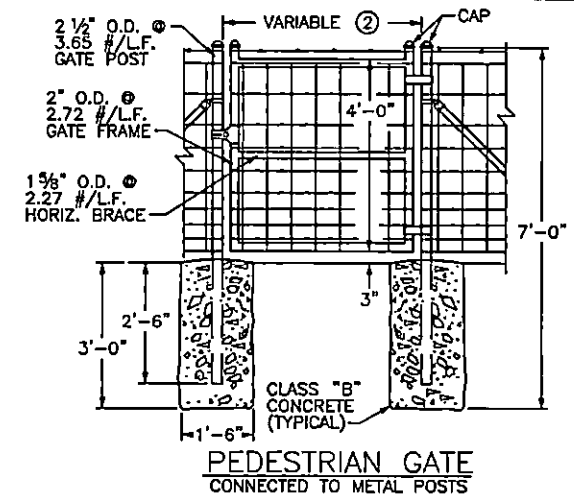
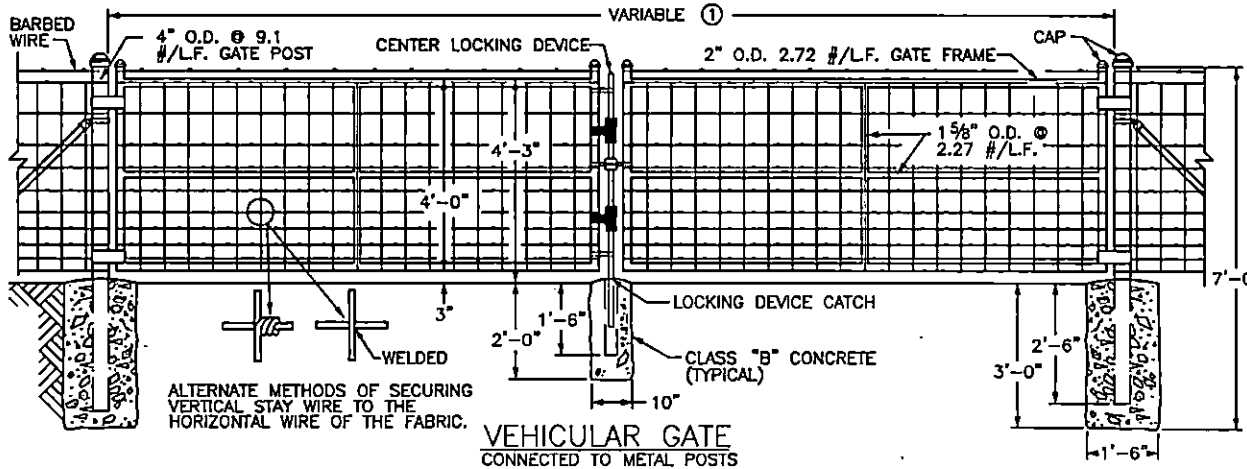


DETAIL "B"

**NOTES:**

1. ON INTERMEDIATE PULL POST ASSEMBLIES, BRACE WIRES SHALL BE REQUIRED FOR BOTH DIRECTIONS.
2. WOVEN-WIRE FABRIC USED IN RIGHT-OF-WAY FENCE SHALL BE EITHER ALUMINUM-COATED STEEL NO. 1047-6-9 OR ZINC-COATED STEEL NO. 1047-6-9.

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
WOVEN WIRE RIGHT-OF-WAY FENCE TYPE 2	
STANDARD DRAWING NO.	313
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17 DATE



**NOTES:**

**BASIS OF PAYMENT:**

- THE CONTRACT UNIT PRICE FOR WOVEN WIRE GATES SHALL BE:
- ① FEET WIDE SINGLE VEHICULAR WOVEN WIRE GATE
  - ① FEET WIDE DOUBLE VEHICULAR WOVEN WIRE GATE
  - ② FEET WIDE PEDESTRIAN WOVEN WIRE GATE
- ① - ② AS SHOWN ON PLANS

**CONSTRUCTION REQUIREMENTS:**

FABRIC TIE WIRES SHALL BE SPACED 12 INCHES ON CENTERS. THE CONTRACTOR IS NOT TO ORDER GATES UNTIL THEIR NECESSITY AND LOCATION HAVE BEEN CERTIFIED BY THE ENGINEER.

**MATERIALS:**


WOVEN-WIRE FABRIC USED IN THE GATES SHALL EITHER BE ALUMINUM-COATED STEEL NO. 1047-6-9 OR ZINC-COATED STEEL NO. 1047-6-9.

O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL - ASTM F 1083 SHALL GOVERN.

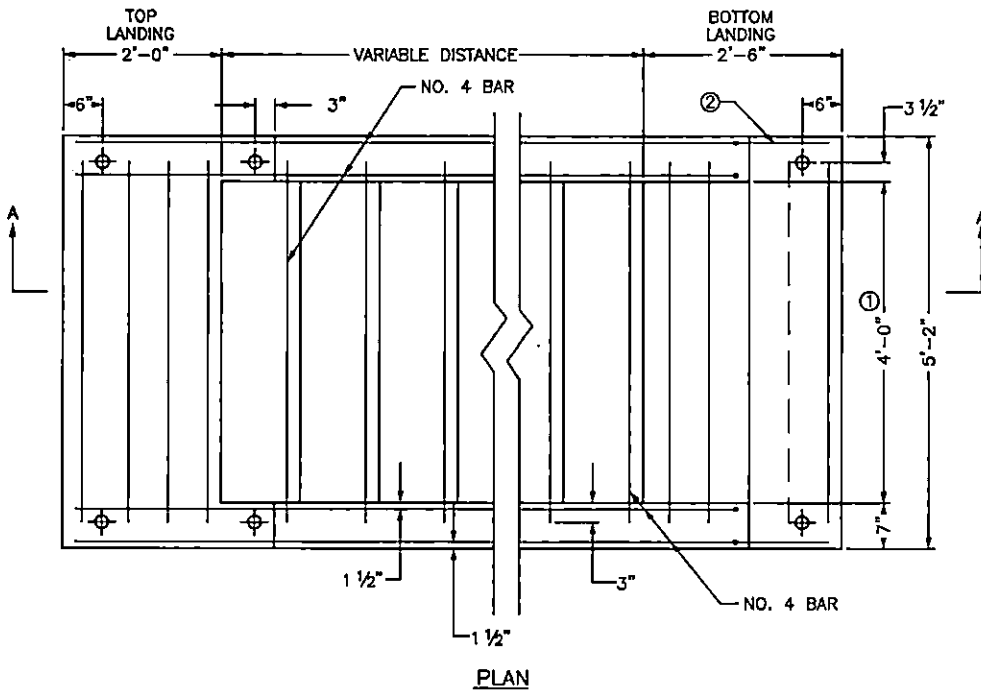
GATES SHALL HAVE HEAVY PRESSED STEEL CORNERS SECURELY RIVETED OR SHALL BE MACHINE NOTCHED AND ELECTRICALLY WELDED SO AS TO BE RIGID AND WATER TIGHT. ALL WELDED JOINTS SHALL BE CLEANED AND PAINTED WITH TWO (2) COATS OF ALUMINUM PAINT.

**GENERAL:**

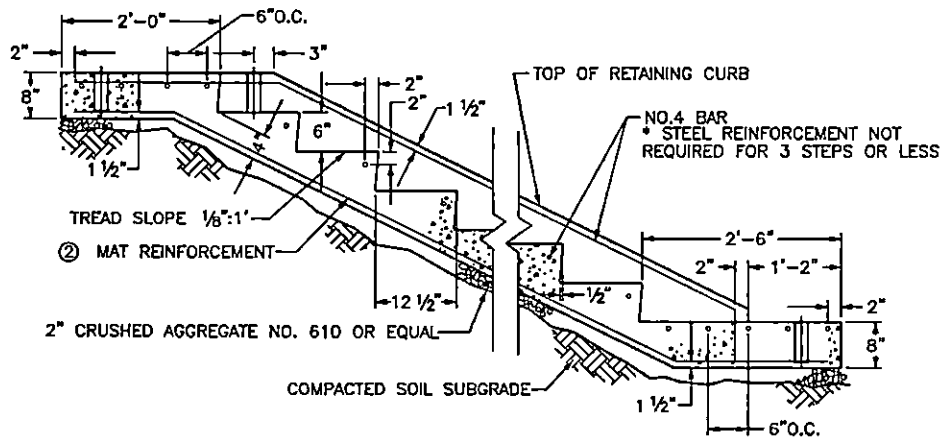
- ① 6' TO 13' WIDTH FOR SINGLE GATE AND 12' TO 26' WIDTH FOR DOUBLE GATE.
- ② 4' TO 6' WIDTH

 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
WOVEN WIRE GATES	
STANDARD DRAWING NO.	314
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER:	DATE
COMMISSIONER	DATE





PLAN



SECTION A-A 2:1 SLOPE

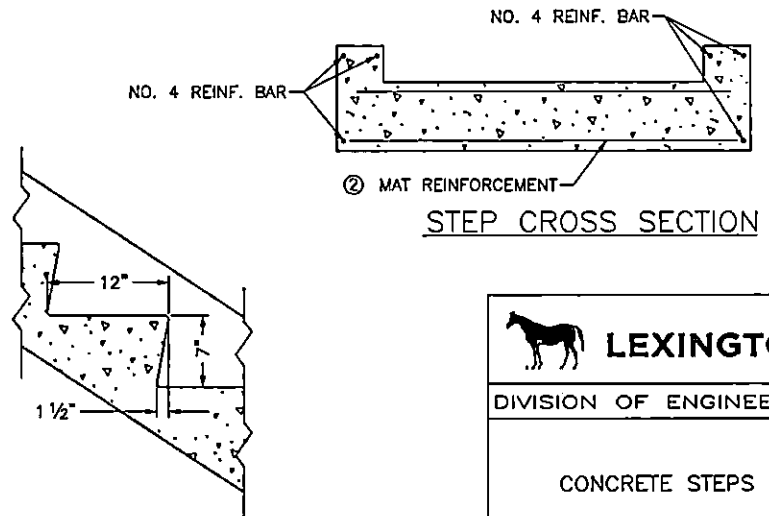
NOTES:

1. MAT REINFORCEMENT (2) NO. 4 REINFORCEMENT BARS, LONG. BARS 6" O.C. AND TRANSV. BARS 12" O.C., MIN. GRADE 40, OR WELDED WIRE FABRIC-6X6-W4XW4, 58 LBS./100 SQ. FT.
2. NO. 4 REINFORCEMENT BARS ADDITIONALLY AS SHOWN.
3. ROUND ALL EXPOSED EDGES AND CORNERS 1/4" R.
4. MAT REINFORCEMENT IN BOTTOM OF THE STEPS SHALL BE WIRE FABRIC OR BAR MAT (2).
5. HANDRAIL SHALL BE REQUIRED WITH THREE OR MORE STEPS.

TABLE OF QUANTITIES

SLOPE	LOCATION	ADDITIONAL NO. 4 BAR REINF. (LBS)		MAT REINFORCEMENT				CU. YDS. CLASS "A" CONCRETE	
		4' WIDTH	(1)	WIRE FABRIC(SQ.FT.)	BAR MAT (LBS)	4' WIDTH	(1)	4' WIDTH	(1)
2:1	BOTTOM LANDING	23.547	3.340	11.776	2.375	27.388	5.177	0.337	0.059
	INTERMEDIATE STEP	8.015	1.336	5.991	1.208	12.191	2.283	0.16	0.025
	TOP LANDING	22.483	3.340	9.504	1.917	20.708	3.897	0.265	0.051
1 1/2:1	BOTTOM LANDING	23.603	3.340	12.602	2.542	28.613	5.400	0.36	0.062
	INTERMEDIATE STEP	7.431	1.336	5.268	1.063	11.119	2.088	0.17	0.027
	TOP LANDING	22.545	3.340	9.710	1.958	21.014	3.952	0.281	0.054

(1) APPROXIMATE QUANTITY TO ADD FOR EACH ADDITIONAL FOOT OF WIDTH OVER 4'-0".



STEP DETAIL FOR 1 1/2:1 SLOPE

**LEXINGTON**  
DIVISION OF ENGINEERING

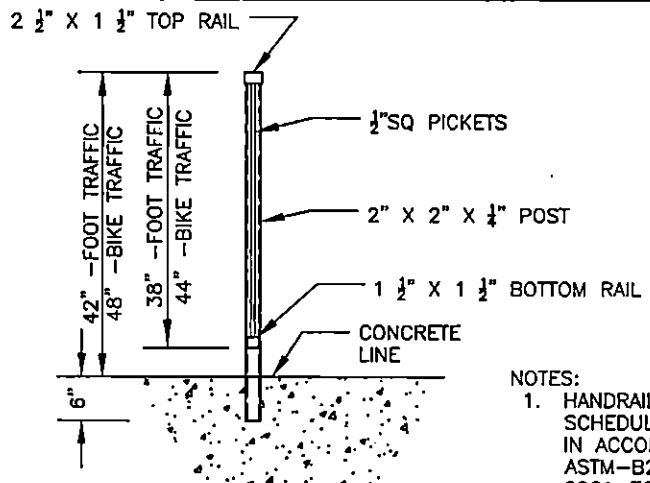
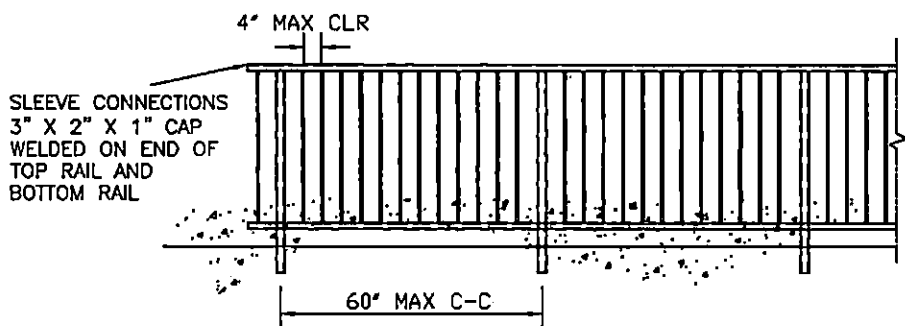
CONCRETE STEPS

STANDARD DRAWING NO. 315

APPROVAL: *[Signature]* DATE 9/22/17

URBAN COUNTY ENGINEER *[Signature]* DATE 9/22/17

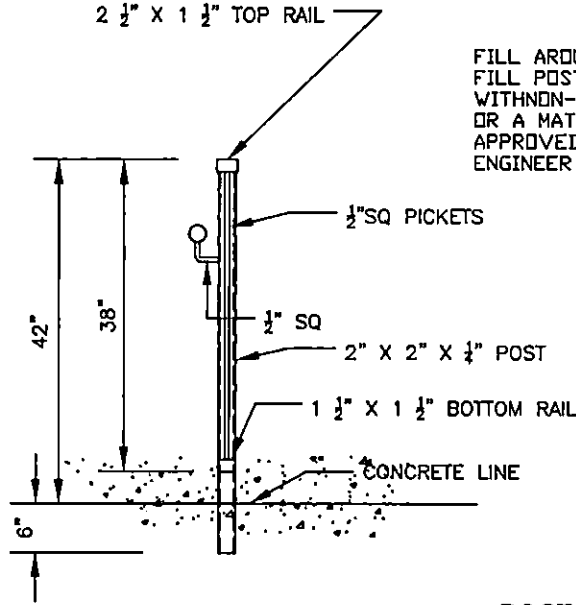
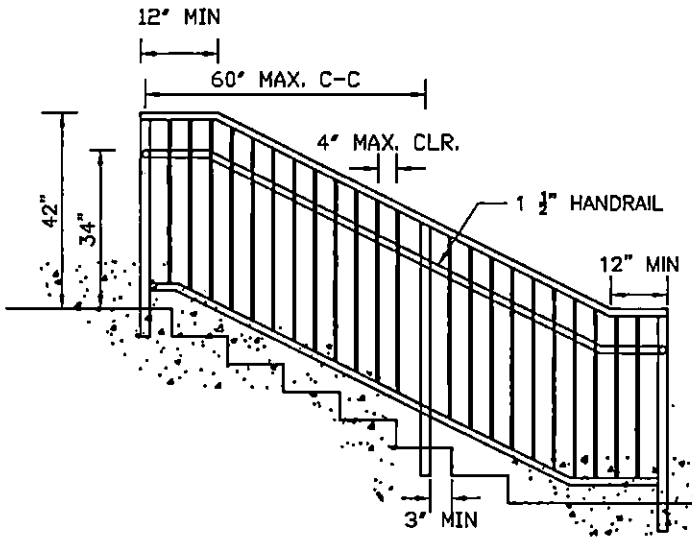
COMMISSIONER DATE



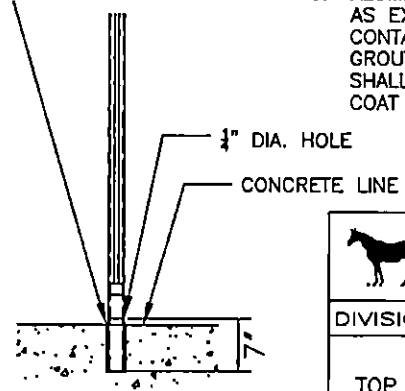
- NOTES:
- HANDRAILS SHALL BE DN 40 SCHEDULE 40 ALUMINUM PIPE IN ACCORDANCE WITH ASTM-B221 OR B210 ALLOY 6061-T6.
  - SQUARE BARS SHALL BE DN 40 SCHEDULE ALUMINUM IN ACCORDANCE WITH ASTM -B221 OR B210 ALLOY 6061-T6.
  - ALL METAL TO BE POWDER COATED BLACK IN ACCORDANCE WITH AAMA 2605.
  - GROUT POSTS TO CONCRETE - SEE POST SETTINGS DETAIL THIS SHEET.
  - ANCHOR POSTS IN CORED OR FORMED HOLES.
  - ALUMINUM SURFACES, SUCH AS EXPOSED ENDS, IN CONTACT WITH CONCRETE, GROUT, OR DISSIMILAR METALS SHALL BE PROTECTED WITH A COAT OF BITUMINOUS PAINT.

TOP RAIL FOR RETAINING WALLS

SECTION



FILL AROUND POST AND FILL POST TO HOLE WITHNON-SHRINK GROUT OR A MATERIAL APPROVED BY THE ENGINEER



HANDRAIL FOR STEPS

SECTION

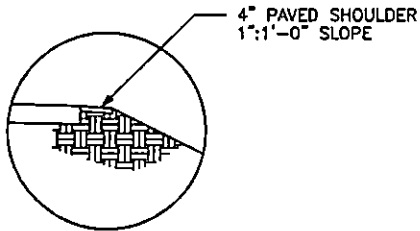
POST SETTING DETAIL



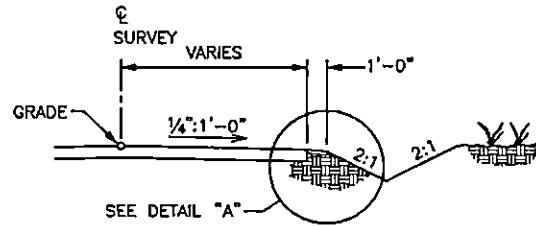
DIVISION OF ENGINEERING

TOP RAIL FOR RETAINING WALLS HANDRAIL FOR STEPS

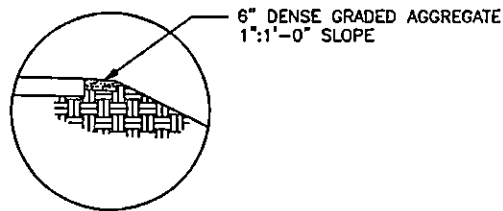
STANDARD DRAWING NO.	316
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



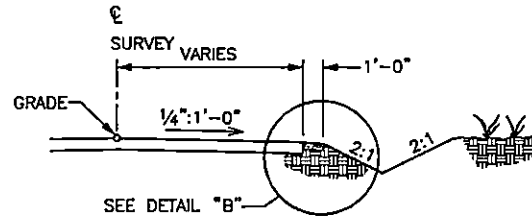
DETAIL "A"



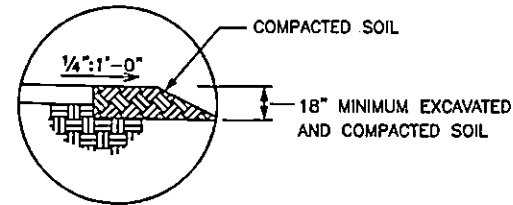
PAVED SHOULDER



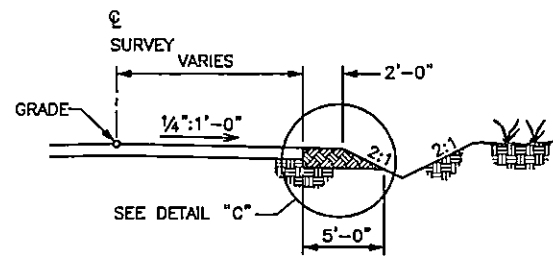
DETAIL "B"



ROCK SHOULDER




DETAIL "C"

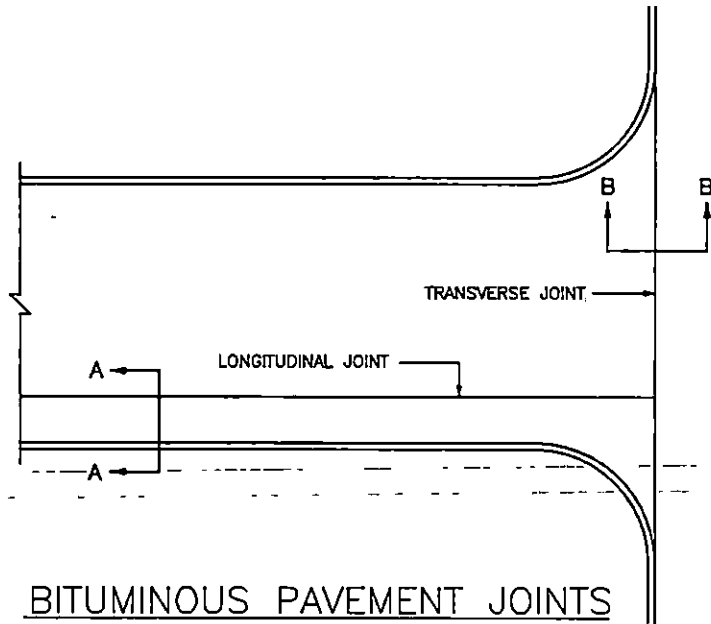


SOIL SHOULDER

**NOTES:**

1. SLOPES AND DRAINAGE DITCHES OUTSIDE THE R/W SHALL BE APPROVED BY THE ENGINEER.
2. DRAINAGE DITCH SIDE SLOPES SHALL BE 2:1 MAXIMUM.

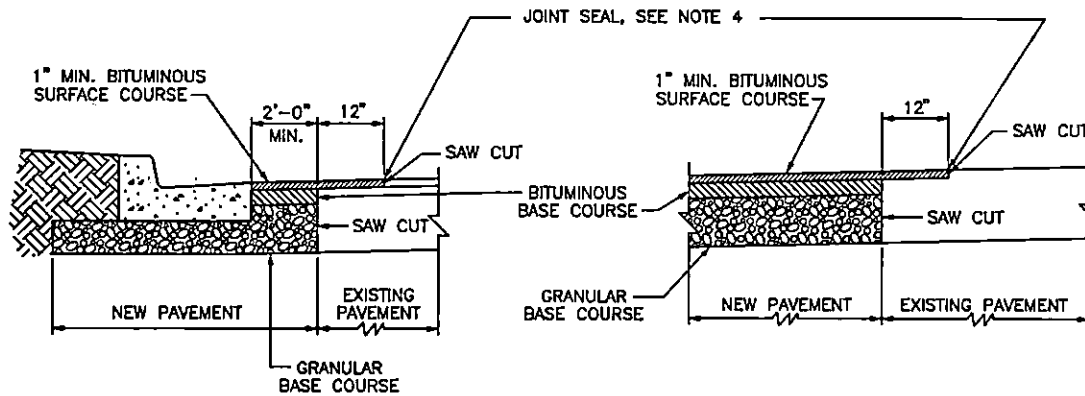
 <b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
COUNTY ROAD TYPICAL SHOULDER SECTIONS (MINIMUM REQUIREMENTS)	
STANDARD DRAWING NO.	317
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



**NOTES:**

1. ALL SAW-CUTS SHALL BE NEAT AND STRAIGHT.
2. IMMEDIATELY BEFORE LAYING NEW BITUMINOUS COURSES, ALL SAW CUT EDGES SHALL BE CLEANED OF DUST AND DEBRIS AND SPRAYED WITH A BITUMINOUS TACK COAT.
3. EDGE KEY SHALL NOT BE REQUIRED IF BOTH EXISTING AND NEW PAVEMENT ARE TO RECEIVE AN OVERLAY AS PART OF THIS CONTRACT.
4. SEAL PERIMETER OF CUT PAVEMENT WITH CRACK SEALANT THAT MEETS ASTM D6690, TYPE 2.

**BITUMINOUS PAVEMENT JOINTS**



**SECTION A-A  
LONGITUDINAL EDGE KEY**

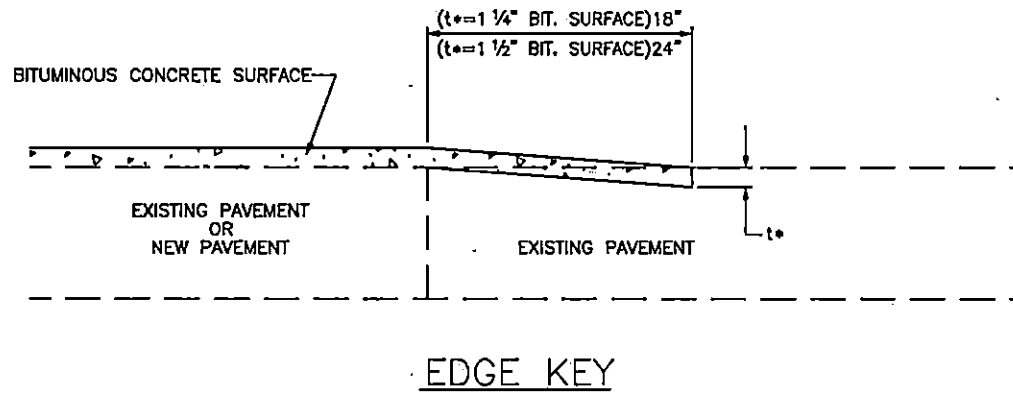
**SECTION B-B  
TRANSVERSE EDGE KEY**






DIVISION OF ENGINEERING

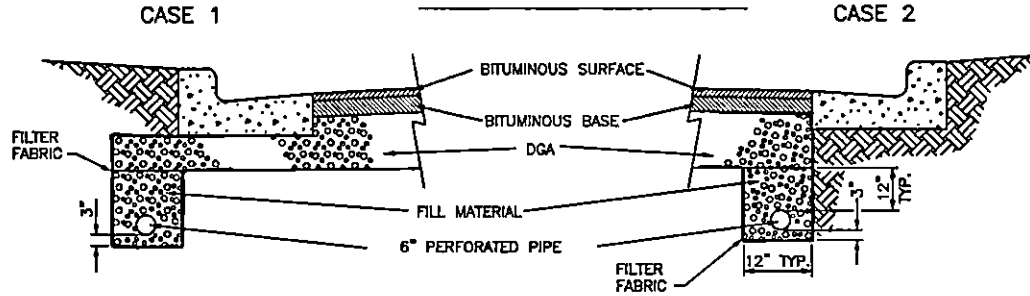
EDGE KEY

STANDARD DRAWING NO.	318
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	9/22/17
	DATE



	<b>LEXINGTON</b>
DIVISION OF ENGINEERING	
TYPICAL EDGE KEY FOR MINIMUM OVERLAYS, SHORT PROJECTS, LOW SPEED	
STANDARD DRAWING NO.	319
APPROVAL	 9/22/17
URBAN COUNTY ENGINEER	 9/22/17
COMMISSIONER	DATE

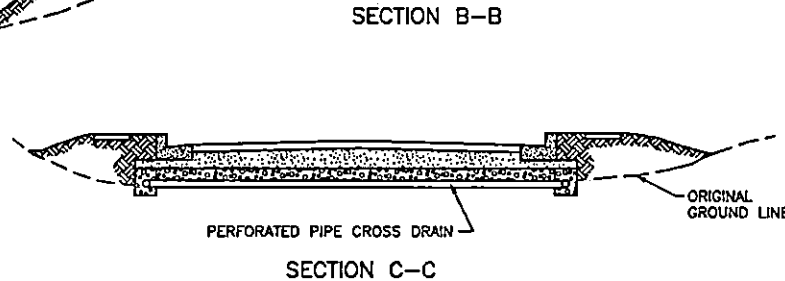
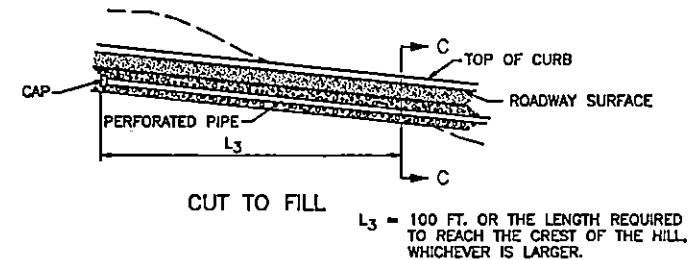
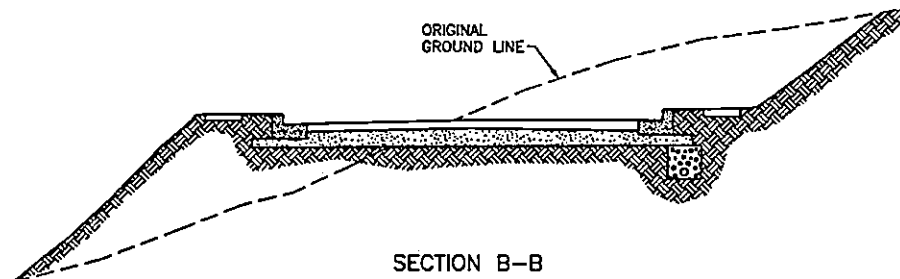
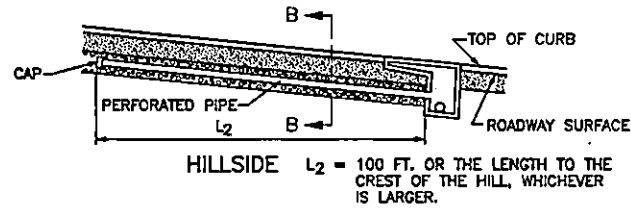
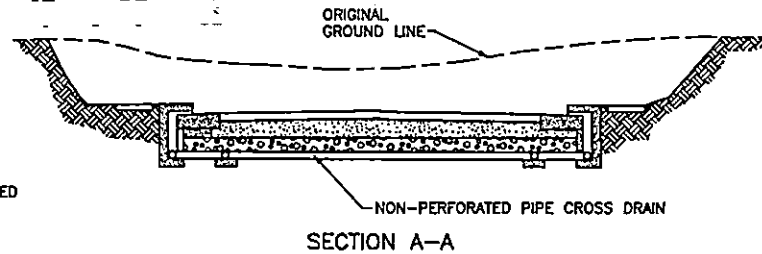
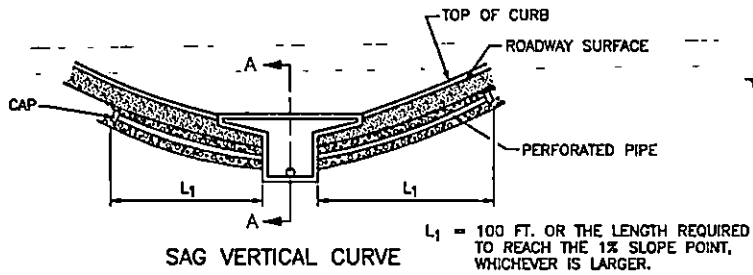
## TYPICAL SECTION



**NOTES:**

1. SUBGRADE DRAINAGE, AS DEPICTED, IS INTENDED FOR USE WITH THE SURFACING PHASE OF CONSTRUCTION, AND SHALL BE INSTALLED ONLY AFTER THE SUBGRADE HAS BEEN COMPLETED, AND PRIOR TO CONSTRUCTING PAVING MATERIALS.
2. THE CAP SHALL BE A STANDARD MANUFACTURED ITEM FURNISHED BY THE PIPE SUPPLIER.
3. TERMINATE PERFORATED PIPE IN CATCH BASIN AT AN ELEVATION WHICH PROVIDES POSITIVE DRAINAGE (MAY REQUIRE ADDITIONAL OPENING IN CATCH BASIN WALL).
4. BACKFILL TO CONSIST OF NO. 78, 8, 9M COARSE AGGREGATE OR NATURAL SAND. THE FILL MATERIAL SHALL BE THOROUGHLY COMPACTED IN LAYERS NOT EXCEEDING 6 INCHES LOOSE MEASUREMENT.
5. CONNECTIONS TO DRAINAGE STRUCTURES AND PIPE TERMINI SHALL BE NON-PERFORATED PIPE MEETING THE REQUIREMENTS OF THE PERFORATED PIPE EXCEPT FOR PERFORATIONS.
6. ALL RAISED NON-PAVED MEDIANS SHALL HAVE SUBGRADE DRAINAGE ASSOCIATED WITH CURB AND GUTTER.

## TYPICAL SUBGRADE DRAINAGE LOCATIONS

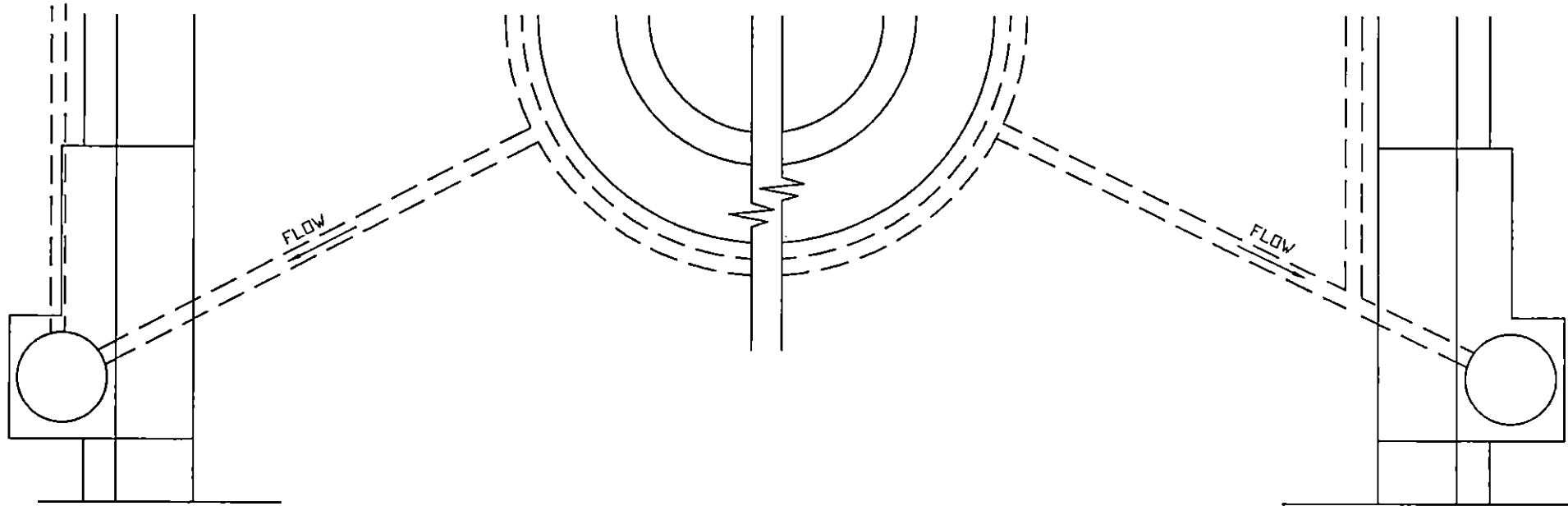


**LEXINGTON**

DIVISION OF ENGINEERING

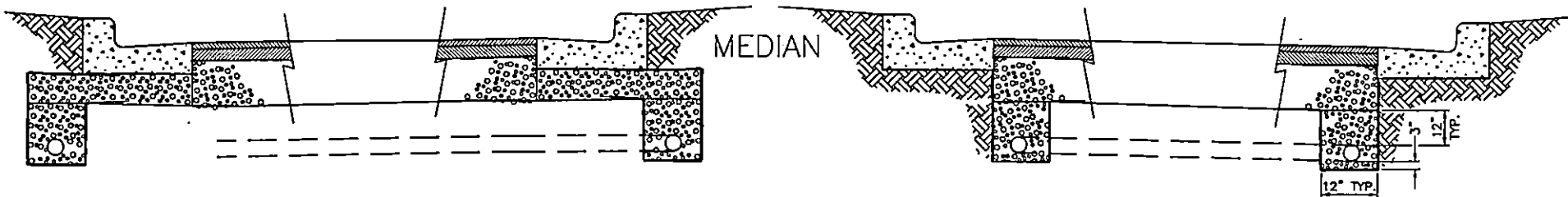
PERFORATED PIPE  
SUBGRADE DRAINAGE  
ALONG ROADWAY

STANDARD DRAWING NO.	320-1
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE



CURB ON PAVEMENT

CURB ON SOIL



TYPICAL SECTION

1. For installation of perforated pipe see Detail Sheet #320
2. Perforated pipe shall completely surround all islands
3. For islands greater than 50" long or wide, perforated pipe surrounding island and leading to the curb inlet shall be 6" diameter.

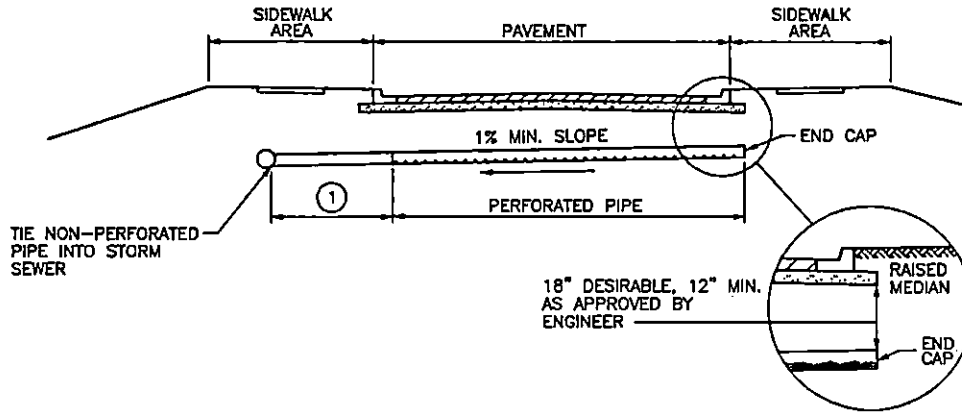


**LEXINGTON**

DIVISION OF ENGINEERING

PERFORATED PIPE  
SUBGRADE DRAINAGE  
FOR RAISED  
NON-PAVED MEDIANS

STANDARD DRAWING NO.	320-2
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE

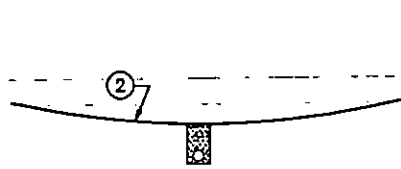
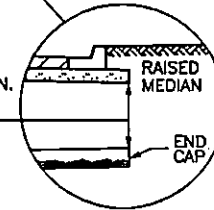


**NOTES:**

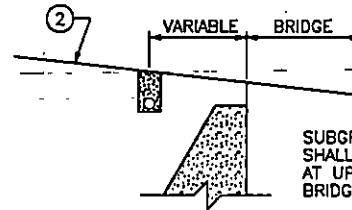
1. SUBGRADE DRAINAGE, AS DEPICTED, IS INTENDED FOR USE WITH THE ROADWAY CONSTRUCTION PHASE AND SHALL BE INSTALLED ONLY AFTER THE SUBGRADE HAS BEEN COMPLETED, AND PRIOR TO PLACING PAVING MATERIALS.
2. SUBGRADE DRAINAGE WILL NOT BE REQUIRED WHEN:
  - A. AGGREGATE SUBGRADE OR NATURAL BANK GRAVEL IS SPECIFIED.
  - B. POROUS OR FREE DRAINING SUBGRADES ARE EVIDENT.
  - C. DIRECTED BY THE LFUCG ENGINEER.
3. THE END CAP SHALL BE A STANDARD MANUFACTURED ITEM FURNISHED BY THE PIPE SUPPLIER.
4. FLOW SHALL BE DIRECTED TOWARD THE FILL SIDE OF THE ROADWAY WHEN POSSIBLE.
5. IF ROCK IS ENCOUNTERED WITHIN 24" OF SUBGRADE, PERFORATED PIPE IS REQUIRED THE FULL LENGTH OF ROCK. POSITIVE OUTLET IS REQUIRED.
6. A MIN. OF 100' OF PERFORATED PIPE IS REQUIRED UPHILL FROM BASINS ON GRADE AND 100' OF PERFORATED PIPE IS REQUIRED EACH WAY FROM SAG BASINS.

TIE NON-PERFORATED PIPE INTO STORM SEWER

18" DESIRABLE, 12" MIN. AS APPROVED BY ENGINEER



SAG VERTICAL CURVES

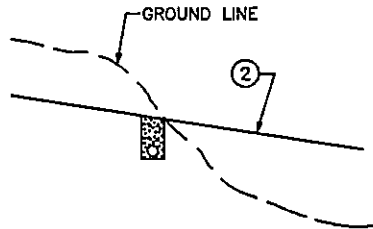


BRIDGES

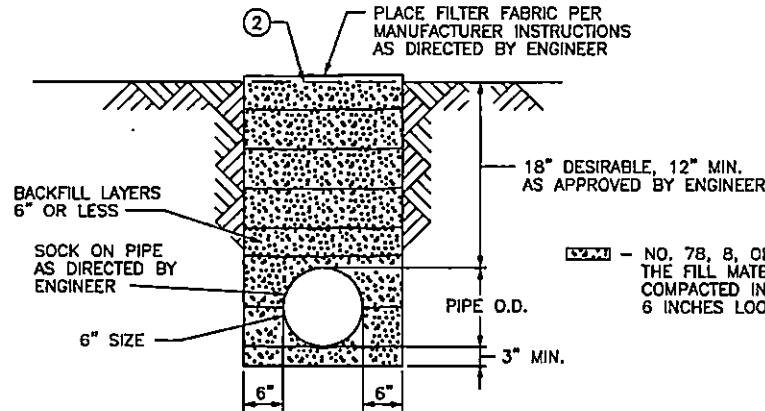
SUBGRADE DRAINAGE SHALL BE INSTALLED AT UPGRADE END OF BRIDGE ONLY

① APPROXIMATELY 8 TO 12 FEET OF PIPE AT THE OUTLET SHALL BE NON-PERFORATED PIPE MEETING THE REQUIREMENTS OF THE PERFORATED PIPE, EXCEPT FOR PERFORATIONS.

② SUBGRADE ELEVATION




CUT TO FILL



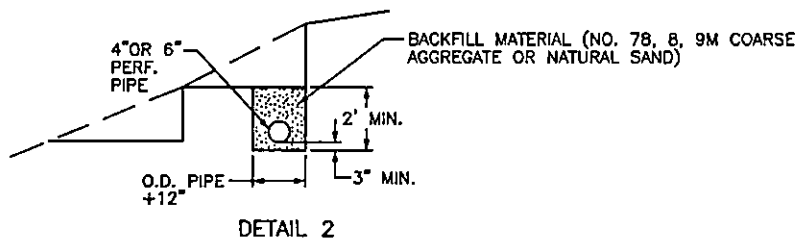
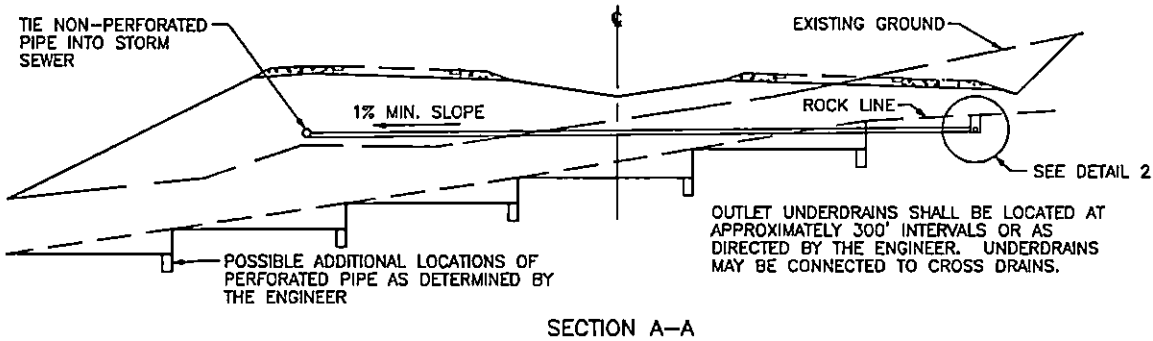
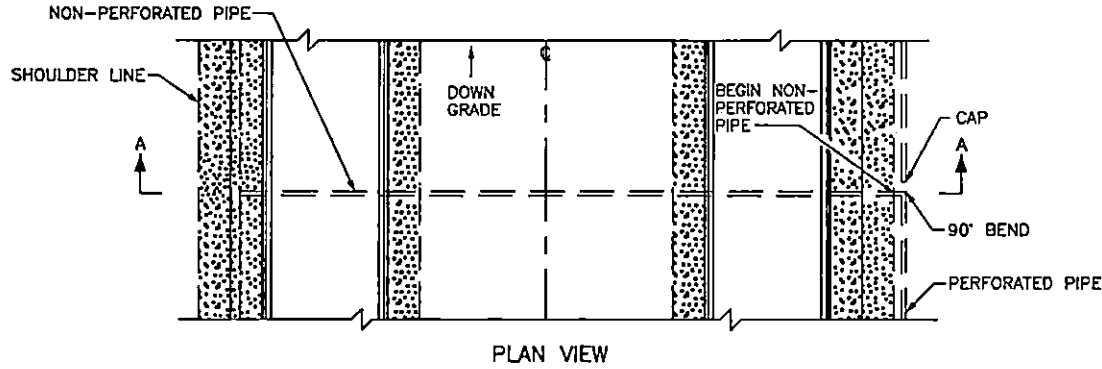
TRENCH DETAIL

② - NO. 78, 8, OR 9M COARSE AGGREGATE. THE FILL MATERIAL SHALL BE THOROUGHLY COMPACTED IN LAYERS NOT EXCEEDING 6 INCHES LOOSE MEASUREMENT.

**TYPICAL SUBGRADE DRAINAGE LOCATIONS**

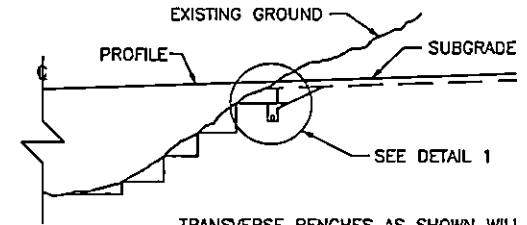
	
<b>LEXINGTON</b>	
DIVISION OF ENGINEERING	
PERFORATED PIPE FOR SUBGRADE DRAINAGE	
STANDARD DRAWING NO.	321
APPROVAL:	9/22/17
URBAN COUNTY ENGINEER	DATE
COMMISSIONER	DATE





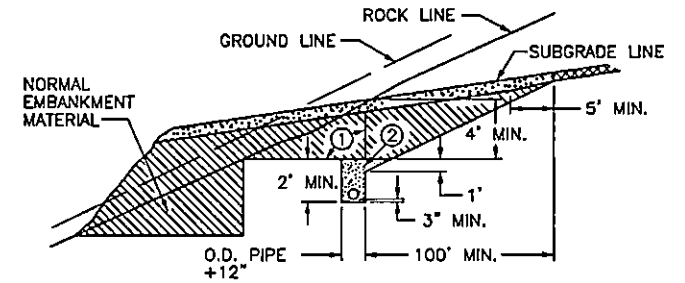
DETAIL 2  
DETAIL FOR LONGITUDINAL UNDERDRAINS

DETAIL FOR TRANSVERSE UNDERDRAIN  
CUT TO FILL CONDITION



TRANSVERSE BENCHES AS SHOWN WILL BE REQUIRED WHERE PROPOSED GRADE INTERSECTS EXISTING GROUND.

1. UNDERDRAINS WILL BE REQUIRED ON UPGRADE BENCH. THIS PERFORATED PIPE UNDERDRAIN SHOULD BE PLACED IN ROCK OR SHALE FORMATIONS IF POSSIBLE. EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER ON CONSTRUCTION.
2. BENCHING AND UNDERDRAIN SHALL BE REQUIRED AT ALL TRANSITIONS FROM ROCK CUTS TO FILL WHETHER OR NOT UNDERDRAIN IS REQUIRED.
3. IF ROCK IS ENCOUNTERED WITHIN 24" OF SUBGRADE, PERFORATED PIPE IS REQUIRED THE FULL LENGTH OF ROCK. POSITIVE OUTLET IS REQUIRED.



DETAIL 1



LEXINGTON

DIVISION OF ENGINEERING

PERFORATED PIPE  
UNDERDRAINS

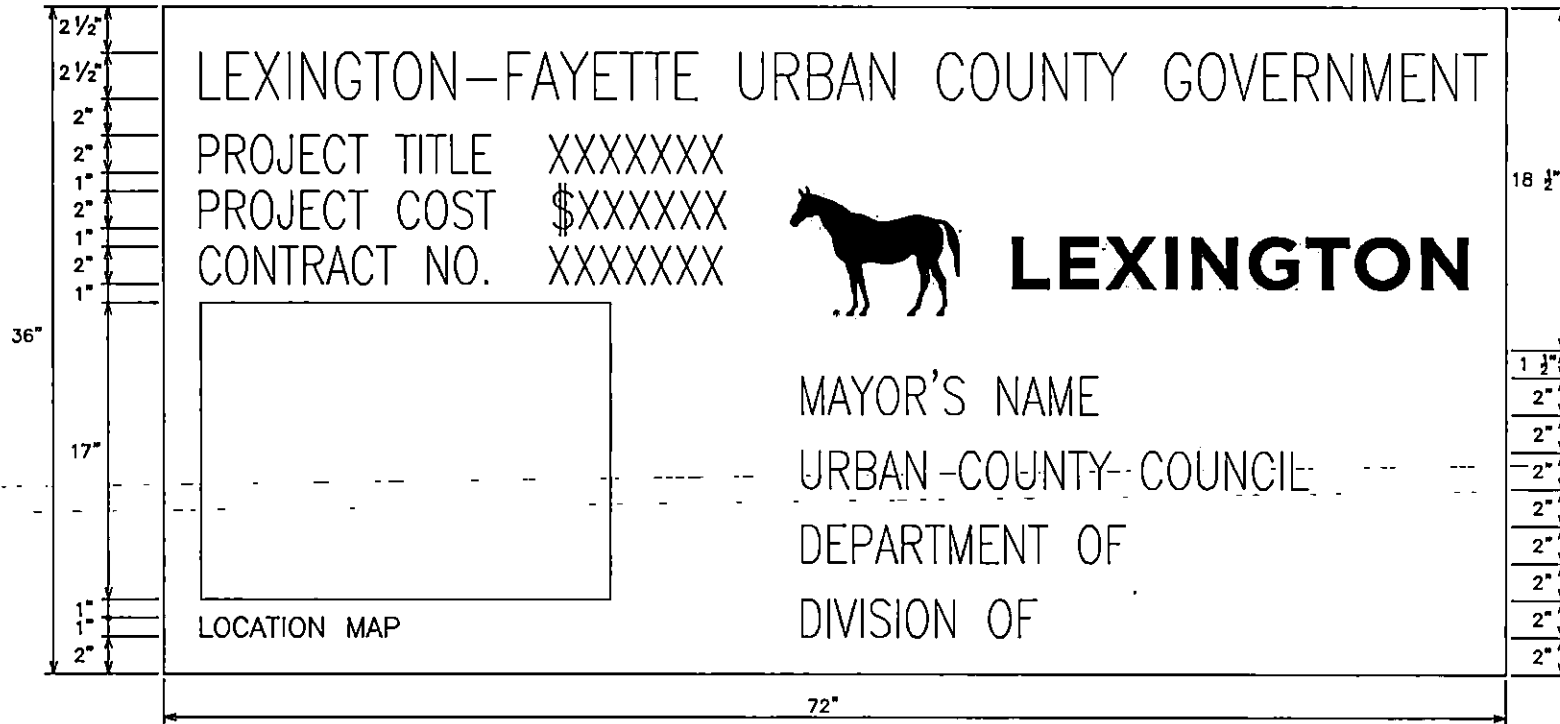
STANDARD DRAWING NO. 322  
APPROVAL: *[Signature]* 9/22/17  
URBAN COUNTY ENGINEER DATE  
*[Signature]* 9/22/17  
COMMISSIONER DATE

SHEET NOTES: ○

- ① LIMITS OF FIRST BENCH.
- ② BACKFILL MATERIAL

NOTE:




1. ALL PERFORATED AND NON-PERFORATED PIPE SHALL COMPLY WITH ASTM & KDOT SPECIFICATIONS.



**NOTES:**

THIS SIGN SHALL BE:

1. FURNISHED AND ERECTED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE, IN ADDITION TO THE NORMAL WARNING AND REGULATORY SIGNS.
2. OF GOOD QUALITY EXTERIOR PLYWOOD OR OTHER APPROVED MATERIAL.
3. PAINTED WITH SOLID BLUE LETTERS ON A WHITE BACKGROUND.
4. UPDATED AS NEEDED TO INDICATE THE APPROPRIATE MAYOR'S NAME.
5. FRAMED AND BRACED SO AS TO REMAIN VERTICAL AND PLAINLY VISIBLE TO THE TRAVELING PUBLIC.
6. ERECTED PRIOR TO STARTING CONSTRUCTION WORK.
7. ERECTED AT EACH END OF THE PROJECT AT LOCATIONS DIRECTED BY THE ENGINEER AND AT OTHER LOCATIONS SPECIFIED ON THE PLANS OR IN THE PROPOSAL.
8. KEPT CLEAN AND IN GOOD CONDITION FOR THE DURATION OF THE CONSTRUCTION AS DIRECTED BY THE ENGINEER.
9. THE COST SHOWN APPLIES ONLY TO THE PORTION OF PROJECT UNDER CONSTRUCTION IN A CONTINUOUS SECTION. IN THE EVENT THE PROJECT CONSISTS OF MORE THAN ONE CONTINUOUS SECTION THE COST SHOWN SHALL BE FOR THE PARTICULAR SECTION WHERE WORK IS IN PROGRESS.
10. NOT TO BE USED ON FEDERAL AID TRANSPORTATION PROJECTS

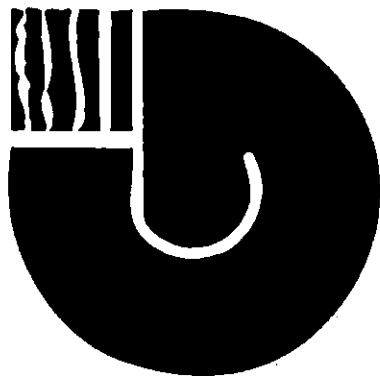
	<b>LEXINGTON</b>
DIVISION OF ENGINEERING	
PUBLIC IMPROVEMENT SIGN	
STANDARD DRAWING NO. 323	
APPROVAL: 	DATE 9/22/17
URBAN COUNTY ENGINEER: 	DATE 9/22/17
COMMISSIONER	DATE

**APPENDIX C**

**50029-008: 11/14/2018  
CONFORMED SET**

**Appendix C LFUCG – WH WWTP FINAL CLARIFIERS  
NO. 7 & NO. 8 STRUCTURAL REPAIRS**

THIS PAGE LEFT BLANK INTENTIONALLY



**GEOTECHNOLOGY**

**FROM THE GROUND UP**

**GEOTECHNICAL EXPLORATION  
WEST HICKMAN WWTP CLARIFIERS 7 & 8  
LEXINGTON, KENTUCKY**

Prepared for:

**HAZEN AND SAWYER  
LEXINGTON, KENTUCKY**

Prepared by:

**GEOTECHNOLOGY, INC.  
ERLANGER, KENTUCKY**

Date:

**APRIL 26, 2018**

Geotechnology Project No.:

**J030975.01**

**SAFETY  
QUALITY  
INTEGRITY  
PARTNERSHIP  
OPPORTUNITY  
RESPONSIVENESS**



April 26, 2018

Mr. Kurt Zehnder, PE  
Hazen and Sawyer  
230 Lexington Green Circle  
Suite 520  
Lexington, Kentucky 40503

Re: Geotechnical Exploration  
West Hickman WWTP Clarifiers 7 & 8  
Lexington, Kentucky  
Geotechnology Project No. J030975.01

Dear Mr. Zehnder:

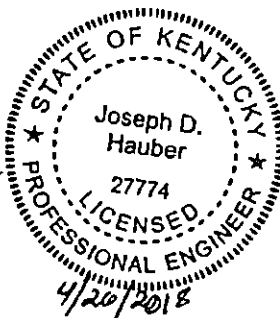
Presented in this report are the results of our geotechnical exploration completed for the West Hickman Wastewater Treatment Plant Clarifiers 7 and 8 in Nicholasville, Kentucky. Our services were performed in general accordance with the Subcontract Agreement for Professional Services between Hazen and Sawyer and Geotechnology, Inc., which was executed via signature on March 23, 2018.

We appreciate the opportunity to provide the geotechnical services for this project. If you have any questions regarding this report, or if we may be of any additional service to you, please do not hesitate to contact us.

Respectfully submitted,  
GEOTECHNOLOGY, INC.

Joseph D. Hauber, PE  
Senior Project Manager

JDH/ACC:cas/jdh/tmk



Copies submitted: Client (email/mail)



---

---

## TABLE OF CONTENTS

1.0 Introduction .....	1
2.0 Project Information & History .....	1
3.0 Site Conditions .....	2
4.0 Subsurface Exploration .....	4
5.0 Laboratory Review and Testing .....	4
6.0 Subsurface Conditions .....	5
6.1 Stratification .....	5
6.1.1 Fill .....	5
6.1.2 Bedrock .....	5
6.2 Groundwater Conditions .....	9
7.0 Load Testing of Rock Anchors .....	10
8.0 Conclusions and Recommendations .....	11
8.1 Rock Tiedown Anchors .....	11
8.1.1 Existing Rock Tiedown Anchors .....	11
8.1.2 New Rock Tiedown Anchors .....	13
8.2 Clarifier Slabs .....	15
9.0 Recommended Additional Services .....	16
10.0 Limitations .....	16
References .....	18
Appendices	
Appendix A – Important Information about This Geotechnical-Engineering Report	
Appendix B – Plans	
Appendix C – Boring Information	
Appendix D – Laboratory Test Data	
Appendix E – Rock Anchor Load Test Forms	



---

---

### LIST OF FIGURES

Figure 1. Clarifiers 7 and 8 (looking west toward West Hickman Creek).....	3
Figure 2. Clarifier 8 with 3H:1V slope, access road, and bedrock cut slope in the background (looking southeast). .....	3
Figure 3. Rock core from Boring B-101. ....	7
Figure 4. Rock core from Boring B-102. ....	8
Figure 5. Rock core from Boring B-103. ....	9
Figure 6. Removed clarifier slab around anchors to be tested with load test beam and reference beam (photograph courtesy of Hazen from March 27, 2018). ....	11
Figure 7. Generic diagram of rock tiedowns (adapted from FHWA 1999). ....	13

### LIST OF TABLES

Table 1. Uniaxial compressive strength test results. ....	6
---	---



**GEOTECHNICAL EXPLORATION  
WEST HICKMAN WWTP CLARIFIERS 7 & 8  
LEXINGTON, KENTUCKY  
April 26, 2018 | Geotechnology Project No. J030975.01**

**1.0 INTRODUCTION**

Geotechnology, Inc. (Geotechnology) prepared this geotechnical exploration report for Hazen and Sawyer (Hazen) for the West Hickman Wastewater Treatment Plant (WWTP) Clarifiers 7 and 8 that are located in Nicholasville, Kentucky. Our services included a geotechnical exploration and reviewing load tests of two existing rock anchors for the slab in Clarifier 8.

The purposes of our services were: to evaluate the general subsurface profile at the site and the engineering properties of the bedrock; and to develop recommendations for the reuse of the existing rock anchors, and the design of the new rock anchors for repairs to the clarifier slabs, as defined in Schedule A of our Subcontract Agreement with Hazen that was executed March 23, 2018.

**2.0 PROJECT INFORMATION & HISTORY**

The following project information was derived from:

- The Original Project Plans titled "West Hickman WWTP Contract No. 2 Expansion/Improvements", prepared by PDR Engineers, Inc. (PDR), and dated January, 2000;
- The geotechnical report titled "Report of Geotechnical Exploration, West Hickman WWTP Improvements, Jessamine County, Kentucky", prepared by Fuller, Mossbarger, Scott, and May Engineers (FMSM), and dated May 6, 1999 (1999 Geotechnical Report);
- The geotechnical report titled "Report of Geotechnical Exploration for the West Hickman WWTP Clarifier No. 8 Failure, Jessamine County, Kentucky", prepared by FMSM, and dated August 31, 2007 (2007 Geotechnical Report);
- The structural report titled "Structural Investigation of Clarifier No. 8 Failure, Lexington-Fayette Urban County Government, West Hickman WWTP, Jessamine County, Kentucky", prepared by Freeland Harris Consulting Engineers (Freeland), and dated August 28, 2009 (2009 Structural Report);
- Field Report No. 051115, which documented damage in Clarifiers 7 and 8, was prepared by Freeland, and was dated May 11, 2015 (2015 Field Report); and



- Correspondence with Hazen.

The subject project involves Clarifiers 7 and 8 at the West Hickman WWTP. The locations of these clarifiers are shown on our Boring Plan included in Appendix B. We understand that these two clarifiers were constructed in 2000, and that rock anchors were provided in the design of the clarifier slabs to resist uplift pressures from groundwater that may accumulate beneath and around the clarifiers. The rock anchors reportedly consisted of 1-3/8-inch-diameter Williams Form Hollow-core Spin-lock Rock Bolts. Per Detail 7/S-3 of the Original Project Plans, the rock bolts were to be embedded 5 feet below the bedrock surface, unless noted otherwise; however, the foundation notes on Sheet S-5 of the Original Project Plans indicates that the rock bolts are to have a minimum 7-foot embedment. For the purposes of this report, the existing rock bolts are assumed to extend only 5 feet below the bedrock surface.

According to the 2007 Geotechnical Report, we understand that the slab in Clarifier 8 failed in September 2006, and that the failure may have been the result of uplift forces from elevated groundwater levels acting on the bottom slab while the clarifier was empty. Per the 2015 Field Report by Freeland, the damaged slab in Clarifier 8 was repaired in 2011 to 2012; however, in 2015, the slab in Clarifier 7 had reportedly failed in a similar manner as the 2006 slab failure in Clarifier 8. Additionally, some damage of the Clarifier 8 slab was reported in the 2015 Field Report that had occurred following the 2011/2012 repairs.

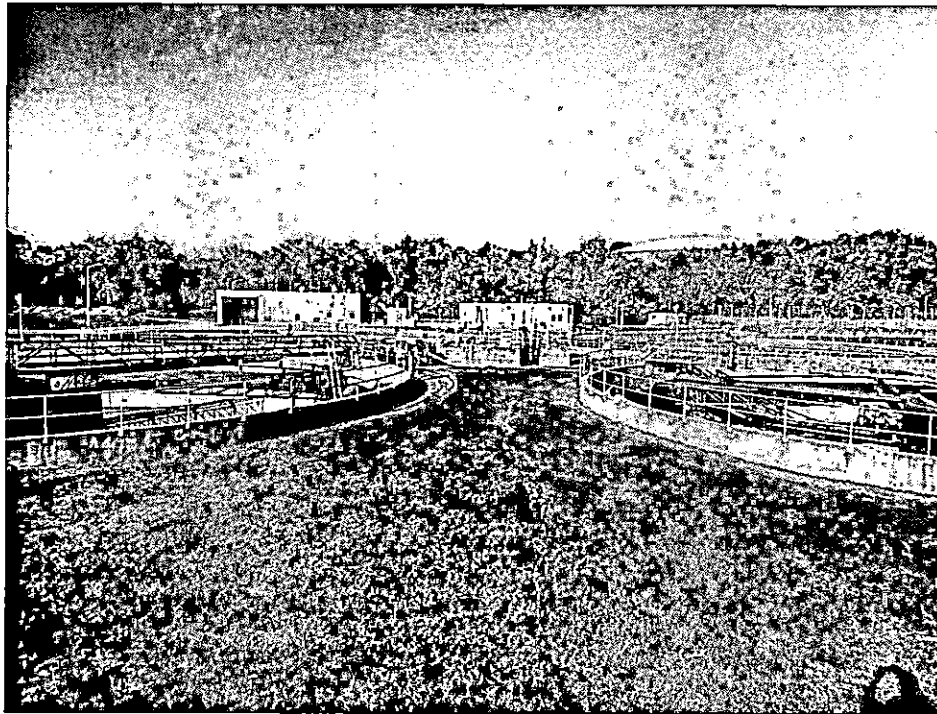
### 3.0 SITE CONDITIONS

Clarifiers 7 and 8 are located in relatively level terrain (cf. Figure 1). To the east of the two clarifiers is a westwardly facing slope with a gradient of approximately 3 horizontal to 1 vertical (3H:1V) per Sheet C-13 of the Project Plans. The access road for the WWTP is located at the crest of this slope. The left-descending bank of West Hickman Creek is located approximately 450 feet west of Clarifiers 7 and 8.

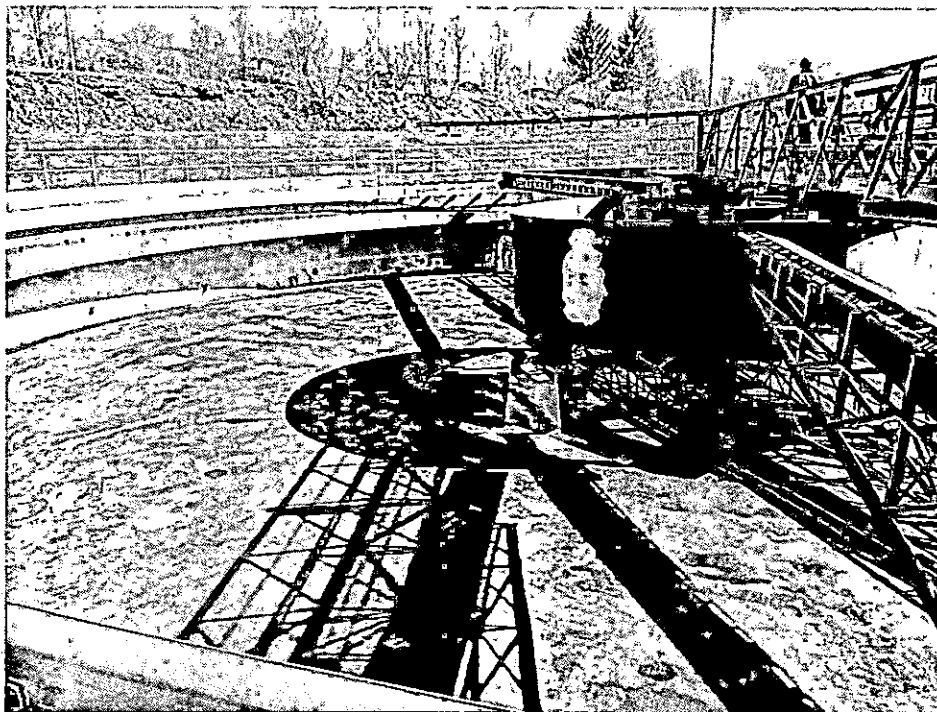
Based on the 2007 Geotechnical Report, Clarifiers 7 and 8 were to have approximate bearing elevations around El. 878 and 879, respectively.<sup>1</sup> Additionally, the clarifiers were to bear on bedrock, requiring bedrock excavation for the clarifiers as well as the 3H:1V slope on the east side of the clarifiers. During our site visit, bedrock outcrops were observed on the east side of the access road (cf. Figure 2).

---

<sup>1</sup> The elevations in this report are referenced to North American Vertical Datum of 1988 (NAVD 88) in units of feet, unless noted otherwise.



**Figure 1. Clarifiers 7 and 8 (looking west toward West Hickman Creek).**



**Figure 2. Clarifier 8 with 3H:1V slope, access road, and bedrock cut slope in the background (looking southeast).**



#### **4.0 SUBSURFACE EXPLORATION**

The subsurface exploration consisted of three borings (numbered B-101 through B-103). The boring locations were selected by Hazen and were staked in the field by a survey crew from Integrated Engineering, PLLC (IE) relative to their survey control and benchmark elevation. The locations of the borings are shown on our Boring Plan, which is included in Appendix B.

The borings were drilled on April 4 and 5, 2018, with a track-mounted drill rig advancing hollow-stem augers. Sampling of the overburden soils and bedrock was accomplished ahead of the augers at the depths indicated on the boring logs, with 2-inch-outside-diameter (O.D.) split-spoons in general accordance with the procedures outlined by ASTM D1586. Standard Penetration Tests (SPTs) were performed on the split-spoon samples to obtain the standard penetration resistance or N-value<sup>2</sup> of the sampled material. Each boring was extended into the bedrock by rock coring with NQ rock core bits affixed to a double-tube core barrel in accordance with the procedures outlined by ASTM D2113. Photographs of the recovered rock core samples are included in Section 6.1.2.

Observations for groundwater were made in the borings during drilling and before introducing drilling fluid (e.g., core water for rock coring).

As each boring was advanced, the Drilling Foreman kept a field log of the subsurface profile noting the soil and bedrock types and stratifications, groundwater, SPT results, and other pertinent data.

Representative portions of the split-spoon samples were placed in glass jars with lids to preserve the in-situ moisture contents of the samples. The recovered rock core samples were placed in plastic or waxed cardboard core boxes. The glass jars and core boxes were marked and labeled in the field for identification when returned to our laboratory.

#### **5.0 LABORATORY REVIEW AND TESTING**

Upon completion of the fieldwork, the samples recovered from the borings were transported to our Soil Mechanics Laboratory, where they were visually reviewed and classified by the Project Geotechnical Engineer.

Uniaxial compression testing was performed on selected rock core samples. The results of these tests are summarized in Section 6.1.2 of this report, and the uniaxial compressive strength test forms are included in Appendix D.

---

<sup>2</sup> The standard penetration resistance, or N-value, is defined as the number of blows required to drive the split-spoon sampler 12 inches with a 140-pound hammer falling 30 inches. Since the split spoon sampler is driven 18 inches or until refusal, the blows for the first 6 inches are for seating the sampler, and the number of blows for the final 12 inches is the N-value. Additionally, "refusal" of the split-spoon sampler occurs when the sampler is driven less than 6 inches with 50 blows of the hammer.



The boring logs, which are included in Appendix C, were prepared by the Project Geotechnical Engineer on the basis of the field logs, the visual classification of the soil and bedrock samples in the laboratory, and the laboratory test results. Soil and Rock Classification Sheets are also included in Appendix C, which describe the terms and symbols used on the boring logs. The dashed lines on the boring logs indicate an approximate change in strata as estimated between samples, whereas a solid line indicates that the change in strata occurred within a sample where a more precise measurement could be made. Furthermore, the transition between strata can be abrupt or gradual.

## **6.0 SUBSURFACE CONDITIONS**

### **6.1 Stratification**

Generally, the existing ground surface at the borings was underlain by fill soils, underlain by limestone bedrock with shale stringers and partings. More specific descriptions of the subsurface strata are provided below, and the boring logs containing detailed material descriptions are located in Appendix C.

#### **6.1.1 Fill**

Existing fill was encountered beneath the ground surface in each of the borings. The fill in these borings varied from 14 to 16 feet thick. The surficial 2 to 5 feet of fill consisted of soft to hard lean clay with limestone fragments, gravel, and organics. The remainder of the fill was primarily described as mixed brown to gray, loose to medium dense clayey gravel with limestone floaters/fragments. In general, the lower portion of the fill is assumed to be shot-rock that was blasted for the clarifier excavations during the original construction in 2000. Additionally, the clayey gravel fill was described as wet at depths ranging from approximately 10 to 15 feet in the borings, indicating that groundwater accumulates in the shot-rock fill.

#### **6.1.2 Bedrock**

The overburden soils at the site are underlain by limestone bedrock with shale stringers and partings. Bedrock was encountered beneath the fill at depths varying from 14 to 16 feet below the ground surface in each of the borings.

According to the 1967 and 1968 United States Geological Survey (USGS) Geologic Maps of the Coletown and Nicholasville Quadrangles (Black 1967 and MacQuown 1968), the bedrock underlying the overburden soils belongs to the Ordovician-aged Tanglewood Limestone Member No. 1. The referenced USGS maps describe this bedrock formation as follows:

The Tanglewood Limestone Member No. 1 consists of limestone and minor shale: The limestone is light-gray, medium- to coarse-grained, thin- to thick-bedded; occurs predominantly in tabular beds, but is crossbedded in part; and is phosphatic, siliceous in part, and bioclastic. The shale is medium-gray, limy, and thin-bedded, and is mostly interlaminated with shaly limestone in thin partings between limestone beds.



As previously stated, the bedrock was cored in each of the borings. The rock core was generally described as medium strong to very strong fine- to medium-grained limestone with shale partings and stringers. Occasional solution features and fracturing of the bedrock were observed with the rock core. Photographs of the rock core are included in Figure 3 through Figure 5. The rock quality designation (RQD)<sup>3</sup> values for these rock cores ranged from 36 to 98 percent. Uniaxial compression tests were performed on three samples of the limestone. The results of these tests are summarized in Table 1

**Table 1. Uniaxial compressive strength test results.**

Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)	Unit Weight (pcf)	Unconfined Compressive Strength (psi)
B-101	RC-9	21.0-21.6	0.5	166	4,790
B-102	RC-9	23.2-23.7	0.5	166	6,130
B-103	RC-10	31.1-31.6	0.2	168	4,410

<sup>3</sup> The rock quality designation (RQD) is defined as the percentage of rock core pieces recovered in lengths longer than 4 inches for the specified interval.

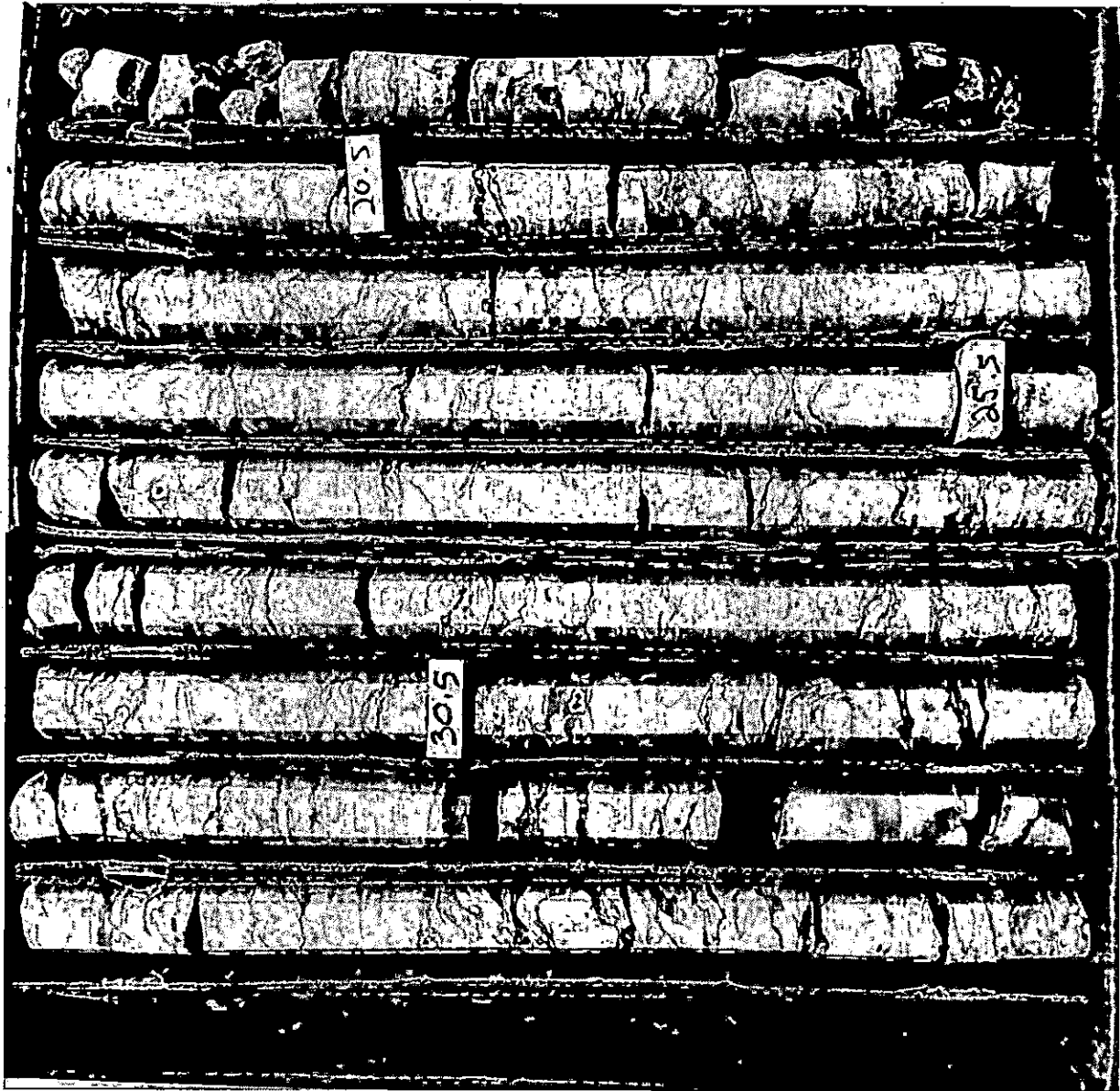


Figure 3. Rock core from Boring B-101.



Figure 4. Rock core from Boring B-102.





Figure 5. Rock core from Boring B-103.

## 6.2 Groundwater Conditions

As mentioned in Section 4.0, groundwater observations were made in the borings during drilling and before introducing core water for rock coring.

Groundwater was encountered in Borings B-101 and B-102 at respective depths of 15 and 13 feet from the ground surface; however, wet fill soils were encountered around 10 to 15 feet deep in each of the borings.



Based on the groundwater observations and our experience, groundwater seepage and flow is anticipated within the shot-rock fill soils and along fractures and solution features within the bedrock. Additionally, groundwater levels and seepage amounts are expected to vary with time, location, season of the year, and amounts of precipitation, and are anticipated to vary with the water level in the West Hickman Creek.

## 7.0 LOAD TESTING OF ROCK ANCHORS

On March 30, 2018, two existing rock anchors were load tested. Based on the field measurements and provided information referenced in Section 2.0, the rock anchors are understood to be 1- $\frac{3}{8}$ -inch-diameter Williams Form Hollow-core Spin-lock Rock Bolts with solid threaded extension rods attached to the tops of the hollow-core section of the rock bolts.

Free Contracting, Inc. (FCI) performed the load testing. Prior to testing, FCI removed the clarifier slab within a 5-foot radius around each anchor that was to be tested (cf. Figure 6). Based on Sheet S-5 of the Original Project Plans, the rock anchors were to be installed at equal spacings along several radii surrounding the center of Clarifiers 7 and 8. We understand that the two load-tested anchors were located along the 25.5-foot radius of Clarifier 8 in the northeastern quadrant of this clarifier, and that IE surveyed the locations of the load-tested anchors.

The first anchor was subjected to a performance test to a maximum test load of 70.5 kips, and the second anchor was subjected to a proof test to a maximum test load of 100 kips. Both the performance test and proof test were performed in general conformance with the procedures described in Section 8.0 of *Recommendations for Prestressed Rock and Soil Anchors*, 5<sup>th</sup> Edition that was published by the Post-Tensioning Institute (PTI) in 2014.

Per documentation from Williams Form, the recommended design load for the 1- $\frac{3}{8}$ -inch-diameter Hollow-core Spin-Lock Rock Bolts is 69 kips, which provides an approximate factor of safety of 2 for tension failure of the steel bar. The yield strength of the bar is reportedly 100 kips per Williams Form, based on a yield stress ( $f_y$ ) of 91 kips per square inch (ksi). The 69 and 100 kip capacities were the basis for the maximum test loads for the performance and proof tests, respectively.

The load and deformation results of the two load tests are reported on the test forms included in Appendix E. In general, the two tested rock anchors were successfully tested to the indicated maximum test loads. See the discussion in Section 8.1.1 for the recommended capacities of the anchors.

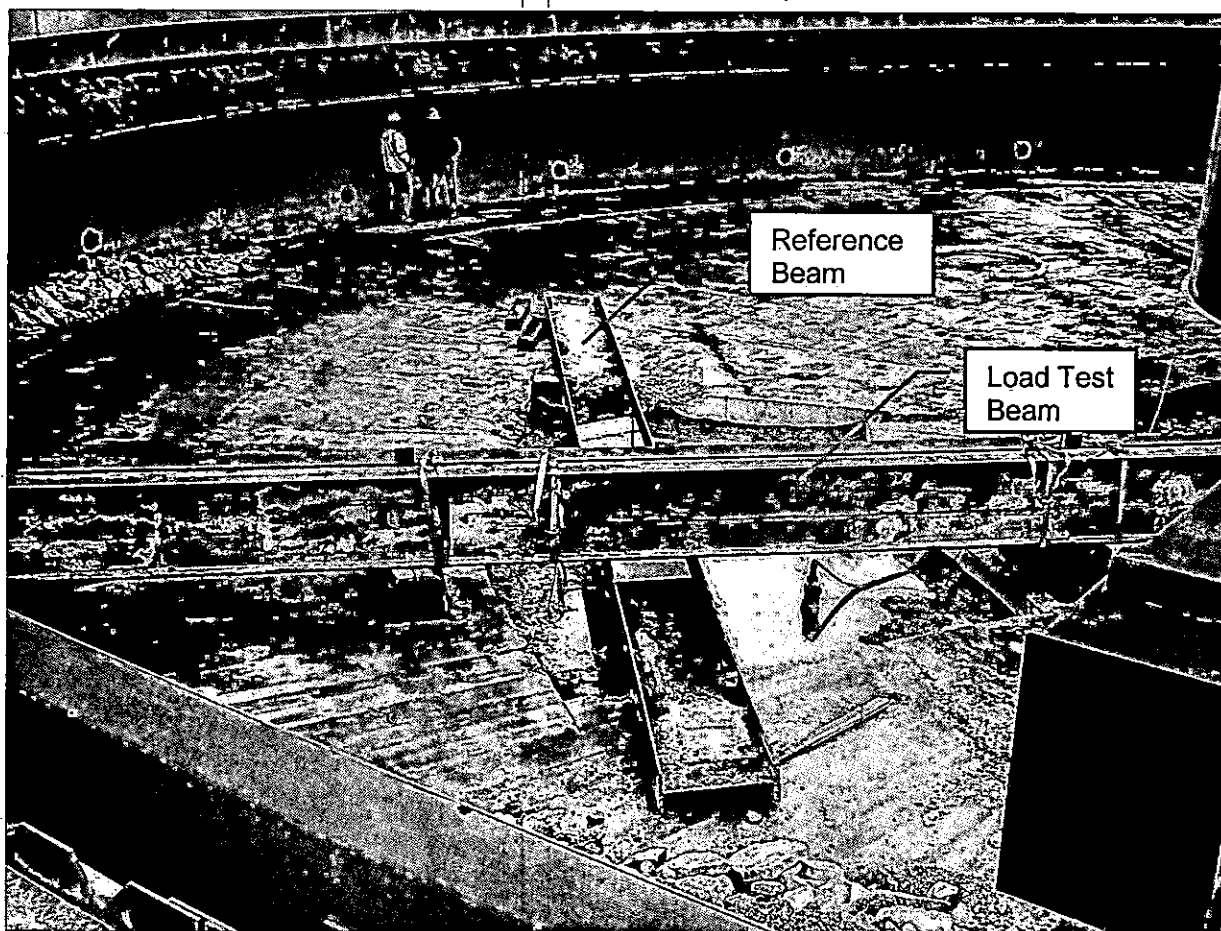


Figure 6. Removed clarifier slab around anchors to be tested with load test beam and reference beam (photograph courtesy of Hazen from March 27, 2018).

## 8.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our engineering reconnaissance of the site, the borings, the visual examination of the recovered samples, the laboratory test results, our understanding of the existing project and project history, our engineering analyses, and our experience as Consulting Soil and Foundation Engineers in Central Kentucky, we have reached the following conclusions and make the following recommendations of this report.

### 8.1 Rock Tiedown Anchors

#### 8.1.1 Existing Rock Tiedown Anchors

As discussed in Section 2.0, the existing rock tiedown anchors are understood to consist of 5-foot-long, 1- $\frac{3}{8}$ -inch-diameter, Hollow-core Spin-lock Rock Bolts. In Clarifier 8, one anchor was successfully performance tested to a maximum test load of 70.5 kips, and a second anchor was successfully proof tested to a maximum test load of 100 kips (cf. Section 7.0). Per PTI (2014), the maximum test load is 133 percent of the design load for the anchors. Therefore, the



aforementioned load tests would suggest that the design loads would be 53 kips or less for the performance-tested anchor and 75 kips or less for the proof-tested anchor. In our opinion, the capacity of the existing anchors should also be evaluated relative to the weight of the rock mass surrounding each anchor. The weight of the rock mass to resist uplift for a given anchor should be based on the buoyant unit weight of the bedrock and the volume of an inverted cone extending up from the anchorage point to the bedrock (i.e., the tip of the cone should start at 5 feet below the bedrock surface). Based on the unit weights of the bedrock measured from the rock core, we recommend that a buoyant unit weight of 103 pounds per cubic foot (pcf) be assumed for the bedrock. Additionally, the inverted cones should extend up at an angle of 45 degrees to the vertical, until they intersect either: (1) the bedrock surface; (2) inverted cones of adjacent tiedown anchors; or (3) the perimeter of the clarifier (cf. Figure 7). At the intersections of inverted cones or the perimeter of the clarifier, the inverted cones should proceed vertically to the bedrock surface.

With the failure mechanism based on the weight of the rock mass engaged by the anchor, the ultimate anchor capacity would be approximately 13.5 kips for an anchor whose inverted cone does not intersect another inverted cone. Assuming a factor of safety of 1.3, the allowable anchor capacity would be 10.4 kips per anchor where the inverted cone does not intercept another cone (see following discussion for reduced capacity related to long-term corrosion of the anchors).

In our opinion and per Figure 5.1 from PTI (2014), the existing tiedown anchors should have been designed and constructed using Class I protection for corrosion (or double-corrosion protection) of the prestressing steel tendon of the rock anchors, as the clarifiers are permanent structures. However, the existing rock anchors only have single-corrosion protection (or Class II protection) since the prestressing steel tendon is only protected by grout. According to the Williams Form documentation, the drill hole diameter for the 1- $\frac{3}{8}$ -inch-diameter rock bolts is 2- $\frac{1}{2}$  inches, which suggests a grout cover of approximately 9/16 inches if the bar is centered in the drill hole.

Additionally, it should be noted that the Hollow-core Spin-Lock Rock Bolts are mechanical anchors where the Spin-Lock assembly at the tip of the bolt expands and provides a "point" connection to the bedrock with no grout cover around the majority of this assembly. Consequently, the "point" connection is subject to long-term corrosion, and such corrosion may reposition the load transfer from this mechanical "point" connection to the grout/bedrock interface of the anchor above the Spin-Lock assembly, which would reduce the volume and weight of the inverted cone (cf. Figure 7) and, therefore, reduce the allowable capacity of the anchor.

Consequently, if the existing anchors are considered to provide long-term resistance for the clarifier slab against uplift forces, we recommend that the provided allowable anchor capacities be reduced to 7.5 kips or less per anchor where the inverted 5-foot-deep cones do not intercept one another. The structural engineer should evaluate whether an additional reduction in



capacity should be applied on the basis that the prestressing steel tendons only have approximately 1/2 inch of grout cover and do not have Class I protection from corrosion.

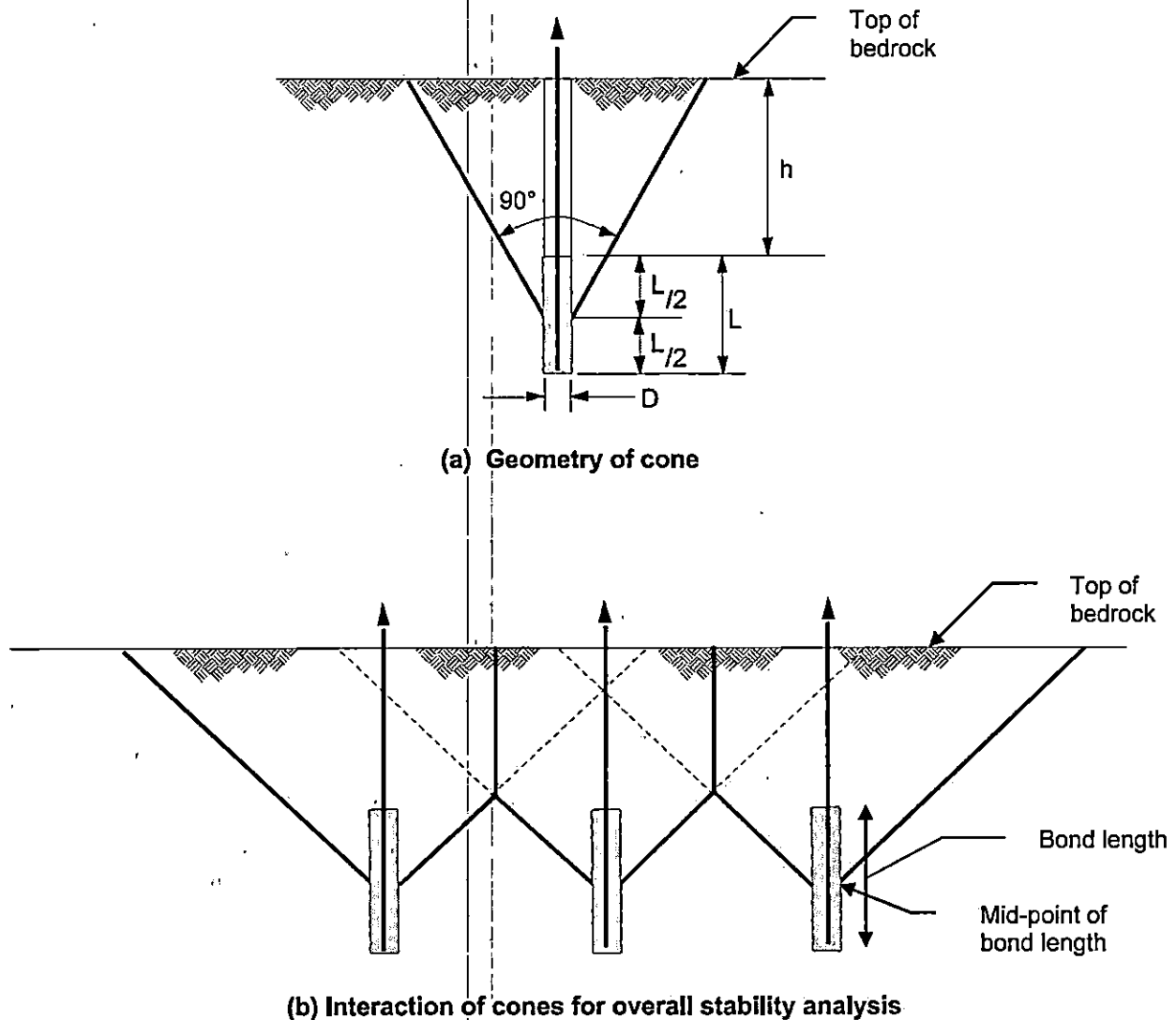


Figure 7. Generic diagram of rock tiedowns (adapted from FHWA 1999).

### 8.1.2 New Rock Tiedown Anchors

Where new rock tiedown anchors will be constructed with the clarifier repairs to resist buoyant uplift pressures, we recommend that the anchors be installed vertically, and be designed and constructed with double-corrosion protection (Class I Protection) in accordance with Section 5.0 of the *Recommendations for Prestressed Rock and Soil Anchors*, 5<sup>th</sup> Edition (PTI 2014).

The new tiedown anchors should be evaluated for the following geotechnical failure mechanisms: (1) failure in shear along the grout/rock interface; and (2) overall rock mass



stability where an inverted cone or wedge of rock is engaged (cf. Figure 7). Additionally, the structural engineer should evaluate failure in shear along the tendon/grout interface to select the minimum tendon bond length of the prestressing steel.

For the first geotechnical failure mechanism, the interface shear along the grout/rock interface should be evaluated to determine the minimum bond length between the grout and the bedrock. An allowable bond stress ( $\tau_{all}$ ) of 100 psi should be assumed between the grout and the bedrock. We recommend a minimum unbonded, free-stressing length of 15 feet for strand tendons and 10 feet for bar tendons. The bond length between the grout and the bedrock should be between:

- 15 and 35 feet for strand anchors;
- 15 and 35 feet for bar anchors greater than 1.75 inches in diameter; and
- 10 and 35 feet for bar anchors 1.75 inches in diameter and smaller.

For the second geotechnical failure mechanism, the buoyant uplift pressures may be resisted by the weight of the structure and the weight of the enclosed rock mass. Similar to the discussion in Section 8.1.1 for the existing anchors, the enclosed rock mass should be defined by inverted cones extending up from the middle of the bond length determined in the evaluation of the second failure mechanism. The inverted cones should extend up at an angle of 45 degrees to the vertical, until they intersect either: (1) the bedrock surface; (2) inverted cones of adjacent tiedown anchors; or (3) the perimeter of the clarifier (cf. Figure 7). At these intersections, the inverted cones should proceed vertically to the bottom of the structure. Additionally, the weight of the enclosed rock mass should be based on a buoyant unit weight of 103 pcf for the bedrock.

Based on the minimum anchor lengths of 20 to 30 feet below the bedrock surface (refer to the previously provided minimum free-stressing and bond lengths for bar and strand anchors), we anticipate that inverted cones for the new anchors will encapsulate the existing anchors. If this occurs, either the capacity of the existing anchor should be ignored, or the inverted cone for the new anchors will need to transition from a cone to a cylinder at a greater depth below the bedrock surface so that the enclosed rock mass for a given new anchor does not intercept the enclosed rock mass of an existing anchor.

Based on the bedrock formation and some of the minor solutioning noted in the rock core samples, some voids may be encountered in the holes drilled for the tiedown anchors. Depending on the size and interconnectivity of the voids, a considerable amount of the low viscosity, neat grout mix may be lost into these voids. Consequently, we recommend that the contract documents include provisions to handle such voids, if they are encountered during construction, as follows:

1. One provision is for the Contractor to use grout containment devices (GCDs) (e.g., grout "socks"). The GCDs should adequately contain the grout under the applicable grout pressures and heads during the grout placement while still allowing a limited amount of grout through the GCDs in order to provide a maximum bond with the surrounding



boreholes. The GCDs should be flexible enough to expand to a diameter at least 40 percent larger than the design borehole diameter and allow for the grout to completely fill the borehole under pressure and seal up adjacent cracks and voids in the bedrock.

2. A second provision is to pre-grout the hole with a thicker, more viscous grout mix (probably containing sand) that fills the voids adjacent to anchor hole. The more viscous grout is then allowed to set, and after setting, the hole is redrilled and anchor tendon assembly is inserted and grouted as it would have been in a hole that did not require the pre-grouting operations.

With these provisions, add items should be incorporated into the bid documents such as:

1. GCDs on a per anchor basis.
2. Pre-grouting anchor holes on a per cubic yard or per cubic foot of grout basis.
3. Redrilling pre-grouted holes on a per anchor basis.

We recommend that the new rock anchors be subjected to load testing in accordance with the specifications discussed in Section 8.0 of the aforementioned 2014 PTI publication. Consideration will need to be given to the appropriate lock-off load, so that the base slab is adequately restrained from uplift but not damaged by deflections from locking-off the tiedown anchors. We recommend that consideration be given to using all-thread steel bars for the tiedown tendons in lieu of strand tendons because the bar tendons do not require a minimum tension load of 50 percent of the ultimate tensile strength of the steel like strand tendons do (cf. Sections 8.4 and C8.4 of the 2014 PTI publication). Consequently, the bar tendon will be more flexible to accommodate the selected lock-off load.

We recommend that installation and testing of the tiedowns be reviewed by the Project Geotechnical Engineer, or a representative thereof, to document that the tiedown anchors are installed in accordance with the design recommendations within this report, the Design Drawings, and specifications.

## **8.2 Clarifier Slabs**

Based on previous discussions with Hazen, we understand that the resistance to buoyant uplift will be provided by passive measures, such as tiedown anchors and the dead weight of the clarifier when empty, and that pressure relief valves and active measures (e.g., filling the clarifiers with water to counteract groundwater levels) will not be employed. Consequently, we recommend that the buoyant uplift pressures acting on the bottom of the clarifier slabs be based on a water surface at the higher of: (1) the ground surface surrounding the clarifier; and (2) the 100-year flood elevation of West Hickman Creek. The design of the clarifier slab repairs should also account for flexural and shear stresses that are generated by the uplift pressures.



We recommend that the granular base beneath the clarifier slabs and above the bedrock consist of crushed No. 57 stone. The crushed stone should be placed in shallow level lifts (or layers), 6 to 8 inches in loose thickness. Each lift should be compacted to at least 75 percent relative density per ASTM D4253 and D4254.

## **9.0 RECOMMENDED ADDITIONAL SERVICES**

The conclusions and recommendations given in this report are based on: Geotechnology's understanding of the existing and proposed design and construction, as outlined in this report; site observations; interpretation of the exploration data; and our experience. Since the intent of the design recommendations is best understood by Geotechnology, we recommend that Geotechnology be included in the final design and construction process, and be retained to review the project plans and specifications to confirm that the recommendations given in this report have been correctly implemented. We recommend that Geotechnology be retained to participate in prebid and preconstruction conferences to reduce the risk of misinterpretation of the conclusions and recommendations in this report relative to the proposed construction of the subject project.

Since actual subsurface conditions between boring locations may vary from those encountered in the borings, our design recommendations are subject to adjustment in the field based on the subsurface conditions encountered during construction. Therefore, we recommend that Geotechnology be retained to provide construction observation services as a continuation of the design process to confirm the recommendations in this report and to revise them accordingly to accommodate differing subsurface conditions. Construction observation is intended to enhance compliance with project plans and specifications. It is not insurance, nor does it constitute a warranty or guarantee of any type. Regardless of construction observation, contractors, suppliers, and others are solely responsible for the quality of their work and for adhering to plans and specifications.

## **10.0 LIMITATIONS**

This report has been prepared on behalf of, and for the exclusive use of, the client for specific application to the named project as described herein. If this report is provided to other parties, it should be provided in its entirety with all supplementary information. In addition, the client should make it clear that the information is provided for factual data only, and not as a warranty of subsurface conditions presented in this report.

Geotechnology has attempted to conduct the services reported herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. The recommendations and conclusions contained in this report are professional opinions. The report is not a bidding document and should not be used for that purpose.

Our scope for this phase of the project did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil,





surface water, groundwater, or air, on or below or around this site. Our scope did not include an assessment of the effects of flooding and erosion of creeks or waterways adjacent to or on the project site.

Our scope did not include: any services to investigate or detect the presence of mold or any other biological contaminants (such as spores, fungus, bacteria, viruses, and the by-products of such organisms) on and around the site; or any services, designed or intended, to prevent or lower the risk of the occurrence of an infestation of mold or other biological contaminants.

The analyses, conclusions, and recommendations contained in this report are based on the data obtained from the subsurface exploration. The field exploration methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Consequently, subsurface conditions may vary gradually, abruptly, and/or nonlinearly between sample locations and/or intervals.

The conclusions or recommendations presented in this report should not be used without Geotechnology's review and assessment if the nature, design, or location of the facilities is changed, if there is a substantial lapse in time between the submittal of this report and the start of work at the site, or if there is a substantial interruption or delay during work at the site. If changes are contemplated or delays occur, Geotechnology must be allowed to review them to assess their impact on the findings, conclusions, and/or design recommendations given in this report. Geotechnology will not be responsible for any claims, damages, or liability associated with any other party's interpretations of the subsurface data or with reuse of the subsurface data or engineering analyses in this report.

The recommendations included in this report have been based in part on assumptions about variations in site stratigraphy that may be evaluated further during earthwork and foundation construction. Geotechnology should be retained to perform construction observation and continue its geotechnical engineering service using observational methods. Geotechnology cannot assume liability for the adequacy of its recommendations when they are used in the field without Geotechnology being retained to observe construction.

A copy of "Important Information about This Geotechnical-Engineering Report" that is published by the Geotechnical Business Council (GBC) of the Geoprofessional Business Association (GBA) is included in Appendix A for your review. The publication discusses some other limitations, as well as ways to manage risk associated with subsurface conditions.



## REFERENCES

- Black, D.F. (1967). "Geologic Map of the Coletown Quadrangle, East-Central Kentucky," United States Geological Survey.
- FHWA (1999). *Geotechnical Engineering Circular No. 4, Ground Anchors and Anchored Systems*, Publication No. FHWA IF-99-015.
- MacQuown, W.C. (1968). "Geologic Map of the Nicholasville Quadrangle, Jessamine and Fayette Counties, Kentucky," United States Geological Survey.
- PTI (2014). *Recommendations for Prestressed Rock and Soil Anchors*, 5<sup>th</sup> Edition, New York, New York.



**APPENDIX A – IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING  
REPORT**

## Important Information about This

# Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

### Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

### Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. Contact the geotechnical engineer before applying this report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.*

### Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

### A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

### A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

### **Do Not Redraw the Engineer's Logs**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

### **Give Constructors a Complete Report and Guidance**

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Environmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

### **Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance**

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBC-Member geotechnical engineer for more information.



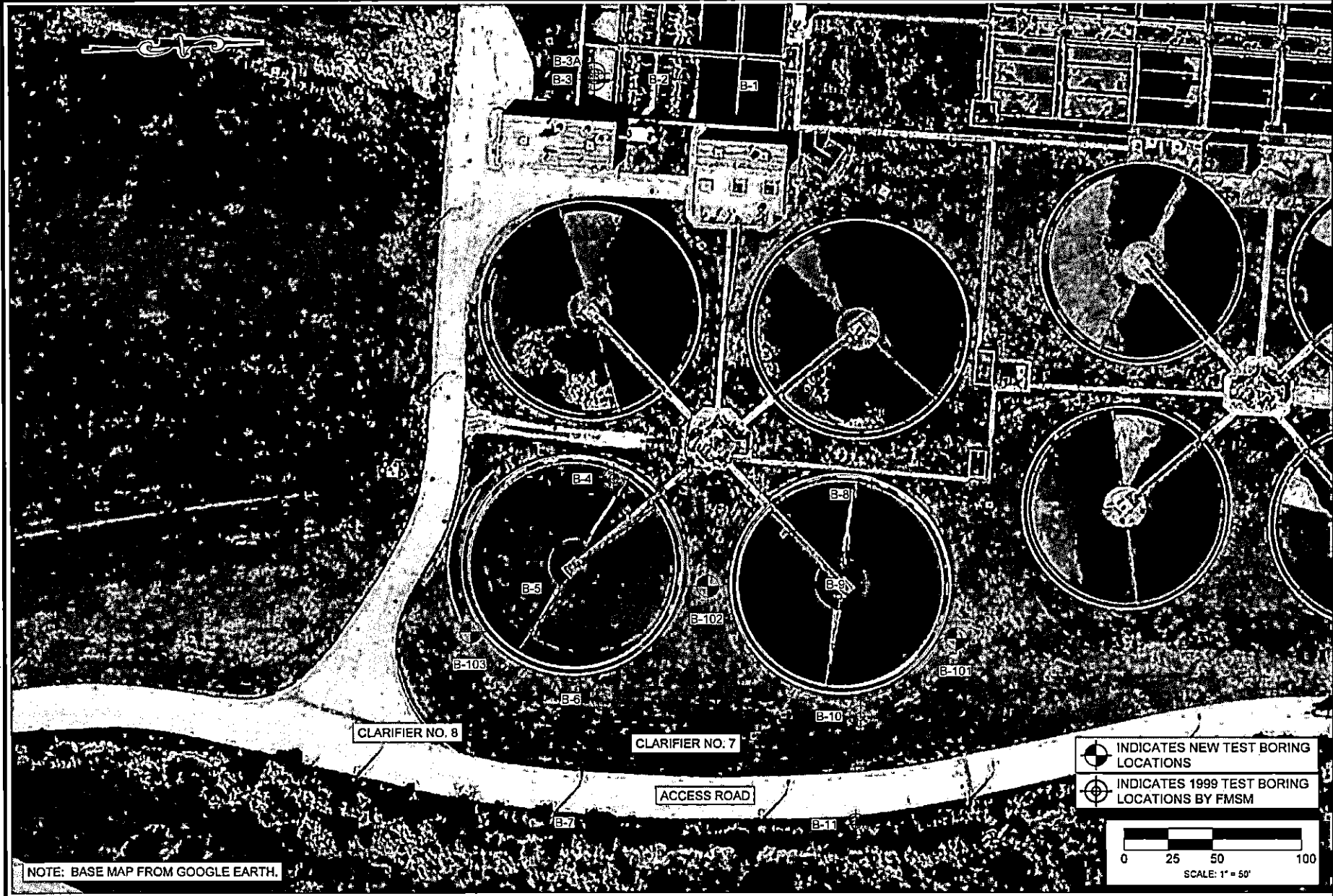
8811 Colesville Road/Suite G106, Silver Spring, MD 20910  
Telephone: 301/565-2733 Facsimile: 301/589-2017  
e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)

Copyright 2015 by Geoprofessional Business Association (GBA). Duplication, reproduction, or copying of this document, or its contents, in whole or in part, by any means whatsoever, is strictly prohibited, except with GBA's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of GBA, and only for purposes of scholarly research or book review. Only members of GBA may use this document as a complement to or as an element of a geotechnical-engineering report. Any other firm, individual, or other entity that so uses this document without being a GBA member could be committing negligent or intentional (fraudulent) misrepresentation.



**APPENDIX B – PLANS**

Boring Plan, Sheet No. 1



**GEOTECHNOLOGY**  
FROM THE GROUND UP

**BORING PLAN**

<b>Title:</b>	West Hickmann WWTP Anchor Testing
<b>Project:</b>	Lexington, Kentucky
<b>Client:</b>	Hazen and Sawyer

Date: 4/25/2018  
Project No.: J030975.01  
Sheet No.: 1



## **APPENDIX C – BORING INFORMATION**

Boring Logs

Soil Classification Sheet

Rock Classification Sheet





## LOG OF TEST BORING

CLIENT: Hazen and Sawyer BORING #: B-101  
 PROJECT: West Hickman WWTP Clarifiers 7 & 8 PROJECT #: J030975.01  
Lexington, Kentucky PAGE #: 1 of 1

LOCATION OF BORING: As shown on Boring Plan, Sheet No. 1

ELEV.	COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS DESCRIPTION	Strata Depth (feet)	Depth Scale (feet)	Sample Condition	Sample Number	Sample Type	SPT* Blows/6"		Recovery		
							Rock Core RQD (%)	(in.)	(%)		
885.0	Ground Surface	0.0	0								
883.0	Mixed brown moist soft FILL, lean clay, trace organics, trace gravel, trace limestone fragments.	2.0		I	1	DS	2-2-2	12	67		
880.5	Mixed brown moist medium stiff FILL, lean clay, with little limestone fragments.	4.5		I	2	DS	3-4-4	12	67		
	Mixed light brown to brown moist to very moist loose to medium dense FILL, clayey gravel with some limestone fragments.		5	I	3	DS	7-6-5	8	44		
				I	4	DS	7-5-4	12	67		
				10	I	5	DS	3-25-27	10	56	
					I	6	DS	7-10-6	6	33	
870.5			14.5								
869.5	Mixed light brown to brown, wet, very loose medium dense FILL, clayey gravel.	15.5	15	I	7	DS	6-50/5"				
867.0	Gray medium strong to very strong LIMESTONE (bedrock).	18.0									
865.0	Gray medium strong to very strong fine- to medium-grained LIMESTONE with shale stringers and partings, thin to medium bedded with vertical fractures (Tanglewood Limestone Member #1).	20.0	20	I	8	RC	RQD = 43%	30	71		
	Gray medium strong to very strong fine- to medium-grained LIMESTONE with shale partings and stringers, thin to medium bedded with minor solutioning at joints (Tanglewood Limestone Member #1).		25	I	9	RC	RQD = 93%	60	100		
				I	10	RC	RQD = 80%	60	100		
				30	I	11	RC	RQD = 76%	60	100	
850.0		35.0	35								
	Bottom of test boring at 35.0 feet.										

Datum: NAVD 88 Hammer Weight: 140 lb. Hole Diameter: 8 in. Drill Rig: TD 6  
 Surface Elevation: 885.0 ft. Hammer Drop: 30 in. Rock Core Diameter: 1.875 in. Foreman: K. Florer  
 Date Started: 4/5/2018 Pipe Size: 2 in. O.D. Boring Method: HSA-3.25 Engineer: Joseph D. Hauber  
 Date Completed: 4/5/2018

<b>BORING METHOD</b> HSA = Hollow Stem Augers CFA = Continuous Flight Augers DC = Driving Casing MD = Mud Drilling	<b>SAMPLE TYPE</b> PC = Pavement Core CA = Continuous Flight Auger DS = Driven Split Spoon PT = Pressed Shelby Tube RC = Rock Core	<b>SAMPLE CONDITIONS</b> D = Disintegrated I = Intact U = Undisturbed L = Lost	<b>GROUNDWATER DEPTH</b> First Noted <u>15.0 ft.</u> At Completion <u>Core Water</u> After <u>--</u> Backfilled <u>Immediately</u>
--	---	--	--

\* SPT = Standard Penetration Test - Driving 2" O.D. Sampler 18" with 140-Pound Hammer Falling 30"; Count Made at 6" Intervals



## LOG OF TEST BORING

CLIENT: Hazen and Sawyer BORING #: B-102  
 PROJECT: West Hickman WWTP Clarifiers 7 & 8 PROJECT #: J030975.01  
Lexington, Kentucky PAGE #: 1 of 1  
 LOCATION OF BORING: As shown on Boring Plan, Sheet No. 1

ELEV.	COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS DESCRIPTION	Strata Depth (feet)	Depth Scale (feet)	Sample Condition	Sample Number	Sample Type	SPT* Blows/6"		Recovery	
							Rock Core RQD (%)	(in.)	(%)	
883.7	Ground Surface	0.0	0							
879.2	Mixed brown moist very stiff to hard FILL, lean clay with trace limestone floaters/fragments.	4.5	0	I	1	DS	3-7-14	18	100	
					2	DS	50/2"	2	100	
871.7	Mixed olive brown and gray moist to very moist loose to medium dense FILL, clayey gravel with limestone floaters/fragments.	12.0	5	I	3	DS	13-8-5	3	17	
					4	DS	5-8-7	2	11	
					5	DS	4-3-4	5	28	
867.7	Mixed olive brown and gray wet loose to medium dense FILL, clayey gravel with limestone floaters/fragments.	16.0	10	I	6	DS	3-2-5	5	28	
					7	DS	50/1"	1	100	
862.7	Gray medium strong to very strong fine- to medium-grained LIMESTONE with shale stringers and partings, thin to medium bedded, highly fractured from 17.8 to 19.2 feet (Tanglewood Limestone Member #1).	21.0	15	I	8	RC	RQD = 36%	56	93	
					9	RC	RQD = 98%	56	93	
847.7	Gray medium strong to very strong fine- to medium-grained LIMESTONE with shale partings and stringers, thin to medium bedded (Tanglewood Limestone Member #1).	36.0	20	I	10	RC	RQD = 90%	60	100	
					11	RC	RQD = 81%	60	100	
	Bottom of test boring at 36.0 feet.		35							

Datum: NAVD 88 Hammer Weight: 140 lb. Hole Diameter: 8 in. Drill Rig: TD 6  
 Surface Elevation: 883.7 ft. Hammer Drop: 30 in. Rock Core Diameter: 1.875 in. Foreman: K. Florer  
 Date Started: 4/4/2018 Pipe Size: 2 in. O.D. Boring Method: HSA-3.25 Engineer: Joseph D. Hauber  
 Date Completed: 4/4/2018

<b>BORING METHOD</b>	<b>SAMPLE TYPE</b>	<b>SAMPLE CONDITIONS</b>	<b>GROUNDWATER DEPTH</b>
HSA = Hollow Stem Augers	PC = Pavement Core	D = Disintegrated	First Noted <u>13.0 ft.</u>
CFA = Continuous Flight Augers	CA = Continuous Flight Auger	I = Intact	At Completion <u>Core Water @ 13.0 ft.</u>
DC = Driving Casing	DS = Driven Split Spoon	U = Undisturbed	After <u>—</u>
MD = Mud Drilling	PT = Pressed Shelby Tube	L = Lost	Backfilled <u>Immediately</u>
	RC = Rock Core		

\* SPT = Standard Penetration Test - Driving 2" O.D. Sampler 18" with 140-Pound Hammer Falling 30"; Count Made at 6" Intervals



## LOG OF TEST BORING

CLIENT: Hazen and Sawyer BORING #: B-103  
 PROJECT: West Hickman WWTP Clarifiers 7 & 8 PROJECT #: J030975.01  
Lexington, Kentucky PAGE #: 1 of 1

LOCATION OF BORING: As shown on Boring Plan, Sheet No. 1

ELEV.	COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS DESCRIPTION	Strata Depth (feet)	Depth Scale (feet)	Sample Condition	Sample Number	Sample Type	SPT* Blows/6"		Recovery	
							Rock Core RQD (%)	(in.)	(%)	
883.5	Ground Surface	0.0	0							
881.5	Mixed brown moist stiff FILL, lean clay, trace limestone fragments.	2.0	0	I	1	DS	2-2-7	6	33	
	Mixed brown to gray moist loose to medium dense FILL, clayey gravel, some limestone fragments and shale fragments.		5	I	2	DS	6-4-4	12	67	
				I	3	DS	7-5-5	6	33	
874.0			9.5	10	I	4	DS	21-15-16	8	44
	Mixed light brown to brown very moist wet, medium dense FILL, clayey gravel with limestone fragments.		10	I	5	DS	6-50/5"	6	55	
869.5			14.0							
	Gray medium strong to very strong fine- to medium-grained LIMESTONE with shale partings and stringers, thin to medium bedded (Tanglewood Limestone Member #1).		15	I	6	RC	RQD = 45%	24	100	
				I	7	RC	RQD = 82%	60	100	
862.5			21.0	20						
	Gray medium strong to very strong fine- to medium-grained LIMESTONE with shale partings and stringers, trace quartz, thin to medium bedded (Tanglewood Limestone Member #1).		25	I	8	RC	RQD = 91%	60	100	
				I	9	RC	RQD = 96%	60	100	
847.5			36.0	35	I	10	RC	RQD = 95%	60	100
	Bottom of test boring at 36.0 feet.		40							

Datum: NAVD 88 Hammer Weight: 140 lb. Hole Diameter: 8 in. Drill Rig: TD 6  
 Surface Elevation: 883.5 ft. Hammer Drop: 30 in. Rock Core Diameter: 1.875 in. Foreman: K. Florer  
 Date Started: 4/4/2018 Pipe Size: 2 in. O.D. Boring Method: HSA-3.25 Engineer: Joseph D. Hauber  
 Date Completed: 4/4/2018

**BORING METHOD**  
 HSA = Hollow Stem Augers  
 CFA = Continuous Flight Augers  
 DC = Driving Casing  
 MD = Mud Drilling

**SAMPLE TYPE**  
 PC = Pavement Core  
 CA = Continuous Flight Auger  
 DS = Driven Split Spoon  
 PT = Pressed Shelby Tube  
 RC = Rock Core

**SAMPLE CONDITIONS**  
 D = Disintegrated  
 I = Intact  
 U = Undisturbed  
 L = Lost

**GROUNDWATER DEPTH**  
 First Noted Core Water  
 At Completion Core Water @ 14.0 ft.  
 After -  
 Backfilled Immediately

\* SPT = Standard Penetration Test - Driving 2" O.D. Sampler 18" with 140-Pound Hammer Falling 30"; Count Made at 6" Intervals



## SOIL CLASSIFICATION SHEET

### NON COHESIVE SOILS (Silt, Sand, Gravel and Combinations)

**Density**

Very Loose	- 5 blows/ft. or less
Loose	- 6 to 10 blows/ft.
Medium Dense	- 11 to 30 blows/ft.
Dense	- 31 to 50 blows/ft.
Very Dense	- 51 blows/ft. or more

**Particle Size Identification**

Boulders	- 8 inch diameter or more
Cobbles	- 3 to 8 inch diameter
Gravel	- Coarse - 3/4 to 3 inches
	- Fine - 3/16 to 3/4 inches
Sand	- Coarse - 2mm to 5mm (dia. of pencil lead)
	- Medium - 0.45mm to 2mm (dia. of broom straw)
	- Fine - 0.075mm to 0.45mm (dia. of human hair)
Silt	- 0.005mm to 0.075mm (Cannot see particles)

**Relative Properties**

Descriptive Term	Percent
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

### COHESIVE SOILS (Clay, Silt and Combinations)

**Consistency**

	<u>Field Identification</u>
Very Soft	Easily penetrated several inches by fist
Soft	Easily penetrated several inches by thumb
Medium Stiff	Can be penetrated several inches by thumb with moderate effort
Stiff	Readily indented by thumb but penetrated only with great effort
Very Stiff	Readily indented by thumbnail
Hard	Indented with difficulty by thumbnail

**Unconfined Compressive Strength (tons/sq. ft.)**

Less than 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 2.0
2.0 - 4.0
Over 4.0

Classification on logs are made by visual inspection.

Standard Penetration Test - Driving a 2.0" O.D., 1 3/8" I.D., sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and making the tests are recorded for each 6 inches of penetration on the drill log (Example - 6/8/9). The standard penetration test results can be obtained by adding the last two figures (i.e. 8+9=17 blows/ft.). Refusal is defined as greater than 50 blows for 6 inches or less penetration.

Strata Changes - In the column "Soil Descriptions" on the drill log, the horizontal lines represent strata changes. A solid line (————) represents an actually observed change; a dashed line (-----) represents an estimated change.

Groundwater observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.



## ROCK CLASSIFICATION SHEET

### ROCK WEATHERING

<u>Descriptions</u>	<u>Field Identification</u>
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Highly Weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Residual Soil	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact with bedding planes visible, and the soil has not been significantly transported.

### ROCK STRENGTH

<u>Descriptions</u>	<u>Field Identification</u>	<u>Uniaxial Compressive Strength (psi)</u>
Extremely Weak	Indented by thumbnail	40-150
Very Weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife.	150-700
Weak	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer.	700-4,000
Medium Strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with a single blow of a geological hammer.	4,000-7,000
Strong	Specimen requires more than one blow of a geological hammer to fracture.	7,000-15,000
Very Strong	Specimen requires many blows with a geological hammer to fracture.	15,000-36,000
Extremely Strong	Specimen can only be chipped with geological hammer.	>36,000

### BEDDING

<u>Descriptive Term</u>	<u>Bed Thickness</u>
Massive	> 4 ft.
Thick	2 to 4 ft.
Medium	2 in. to 2 ft.
Thin	< 2 in.



**APPENDIX D – LABORATORY TEST DATA**  
Rock Uniaxial Compressive Strength Test Forms



# GEOTECHNOLOGY

FROM THE GROUND UP

## UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE ASTM D7012 - METHOD C

CLIENT: Hazen and Sawyer  
PROJECT NO.: J030975.01  
PROJECT: West Hickman WWTP Clarifiers 7 & 8  
LOCATION: Lexington, Kentucky

DATE: 4/24/2018

BORING NO.: B-101  
SAMPLE DESCRIPTION: Gray medium strong LIMESTONE with shale stringers and partings  
BEDROCK FORMATION: Tanglewood Limestone Member No. 1  
LOAD DIRECTION: 90° to Lithology  
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE NO.: RC-9  
TEST TEMPERATURE (°F):

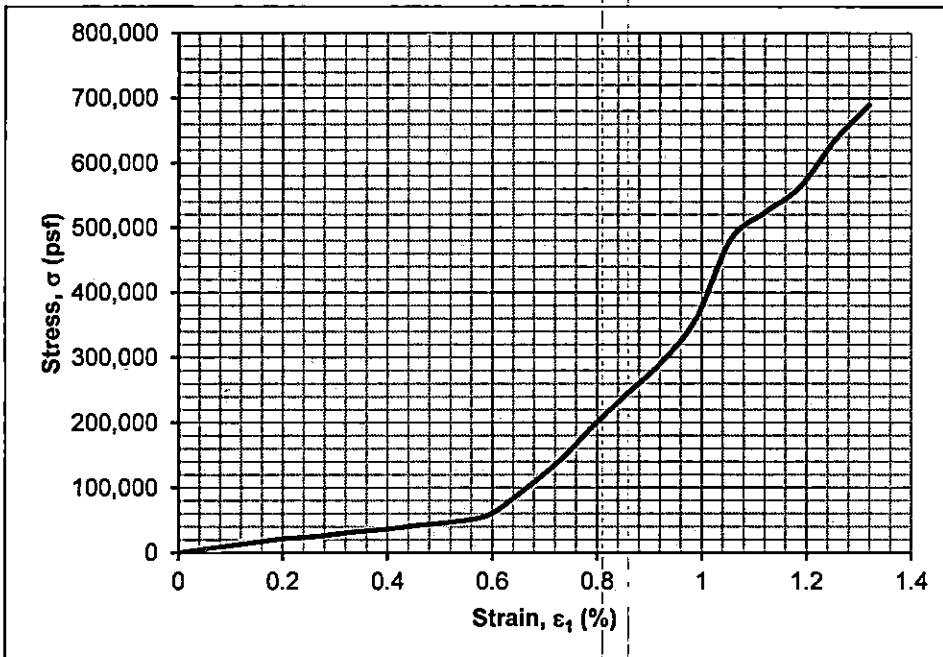
DEPTH (ft.): 21.0-21.6

### SAMPLE DATA

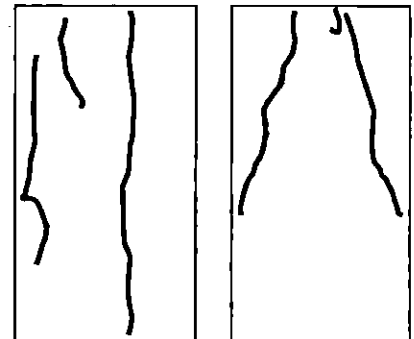
DIAMETER (in.):	1.86
HEIGHT (in.):	4.55
HEIGHT TO DIAMETER RATIO:	2.4
WET UNIT WEIGHT (pcf):	166.7
DRY UNIT WEIGHT (pcf):	166.0
MOISTURE CONTENT (%):	0.5

### FAILURE DATA

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	0.5
TIME TO FAILURE (min.):	2.4
AXIAL STRAIN AT FAILURE (%):	1.3
UNIAXIAL COMPRESSIVE STRENGTH, $q_u$ (ksf):	689.0
UNIAXIAL COMPRESSIVE STRENGTH, $q_u$ (psi):	4,790.0



### FAILURE SHAPES



FRONT VIEW

SIDE VIEW

REMARKS :









## **APPENDIX E – ROCK ANCHOR LOAD TEST FORMS**

Performance Test Form of Anchor 1

Proof Test Form of Anchor 2



**ROCK ANCHOR PERFORMANCE TEST REPORT**

Hold at 1.33DL

Time (min.)	Load (kips)	Pressure Gauge Reading (psi)	Dial Gauge Reading (in.)	Reset of Dial Gauge (in.)	Total Movement, $\delta_{ti}$ (in.)	Residual Movement, $\delta_{ri}$ (in.)	Elastic Movement, $\delta_{ei}$ (in.)
0	70.5	5,750	0.077		0.066	-	-
1	70.5	5,750	0.077		0.066	-	-
2	70.5	5,750	0.080		0.069	-	-
3	70.5	5,750	0.080		0.069	-	-
4	70.5	5,750	0.081		0.070	-	-
5	70.5	5,750	0.081		0.070	-	-
6	70.5	5,750	0.081		0.070	-	-
10	70.5	5,750	0.075		0.064	-	-
15	70.5	5,750				-	-
20	70.5	5,750				-	-
25	70.5	5,750				-	-
30	70.5	5,750				-	-
45	70.5	5,750				-	-
60	70.5	5,750				-	-
AL	6.1	500	0.010		-0.001	-0.001	0.065

Minimum elastic movement at 1.33DL,  $\delta_{e,min}$  (in.): 0.037

Maximum elastic movement at 1.33DL,  $\delta_{e,max}$  (in.): 0.100

If the difference in total movement between 1 and 10 minutes exceeds 0.040 in., the Test Load shall be maintained for an additional 50 minutes (i.e., a total hold time of 60 minutes).

**Lock-off Load**

Theoretical Load	Lock-off Load (kips)	Pressure Gauge Reading (psi)	Dial Gauge Reading (in.)	Reset of Dial Gauge (in.)	Total Movement, $\delta_{ti}$ (in.)	Residual Movement, $\delta_{ri}$ (in.)	Elastic Movement, $\delta_{ei}$ (in.)
		0				-	-

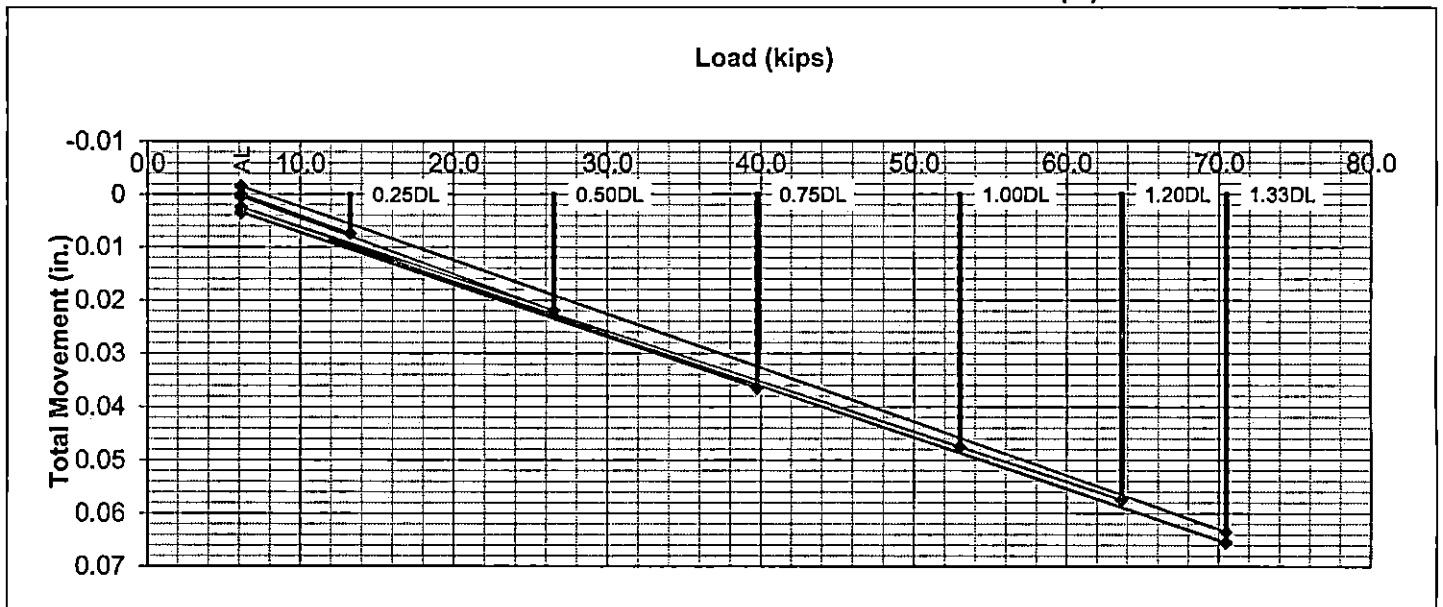
**Lift-off Load**

Pressure Gauge Reading (psi):

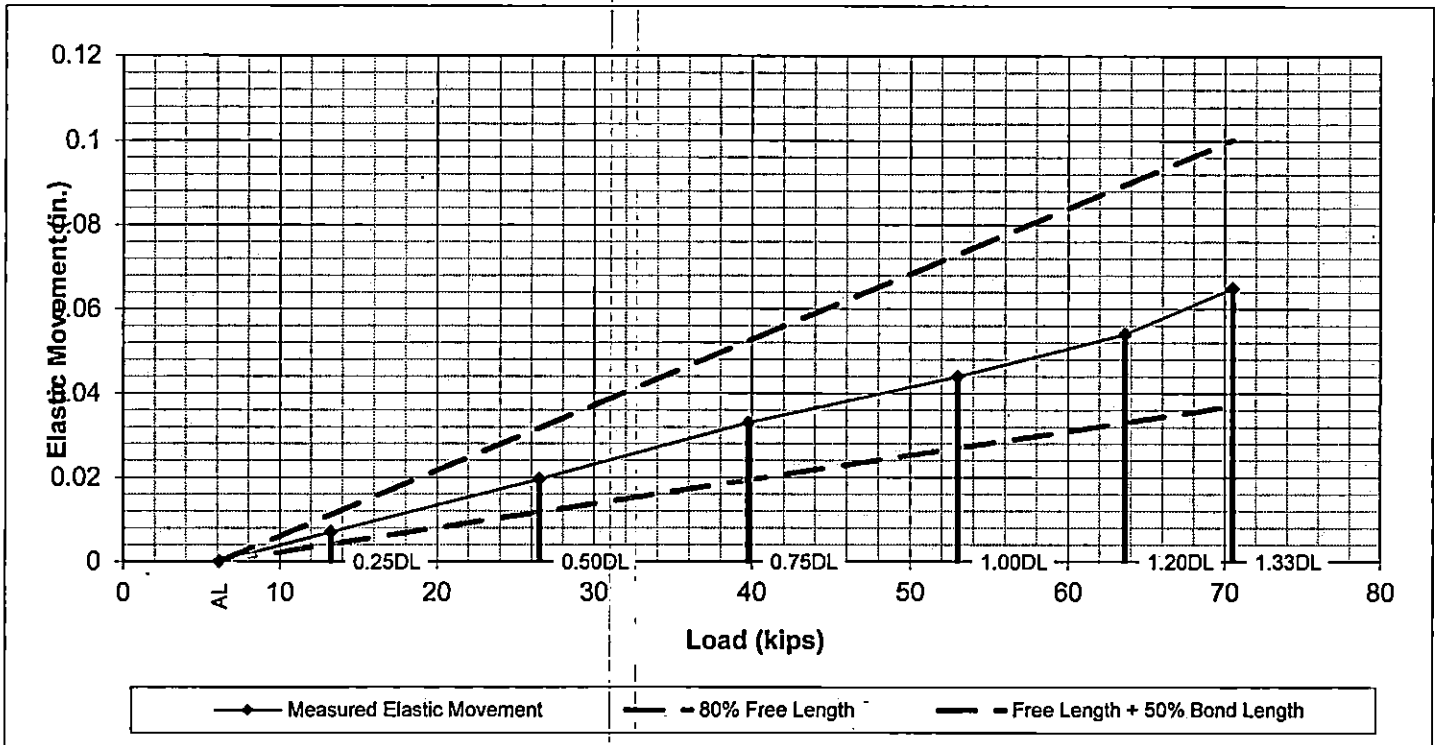
Lift-off Load (kips):

Percent Difference from Lock-off Load (%):

≤ 5%



ROCK ANCHOR PERFORMANCE TEST REPORT



REMARKS:

AL = Alignment load (varies between 5 and 15% of DL).  
DL = Design Load

Charles A. Sayre, EI  
Field Engineer  
CAS;jdh  
Copies submitted: Hazen & Sawyer (email)



**ROCK ANCHOR PROOF TEST REPORT**

**Lock-off Load**

Theoretical Load	Lock-off Load (kips)	Pressure Gauge Reading (psi)	Dial Gauge Reading (in.)	Reset of Dial Gauge (in.)	Total Movement, $\delta_{ti}$ (in.)	Residual Movement, $\delta_{ri}$ (in.)	Elastic Movement, $\delta_{ei}$ (in.)
		0				-	-

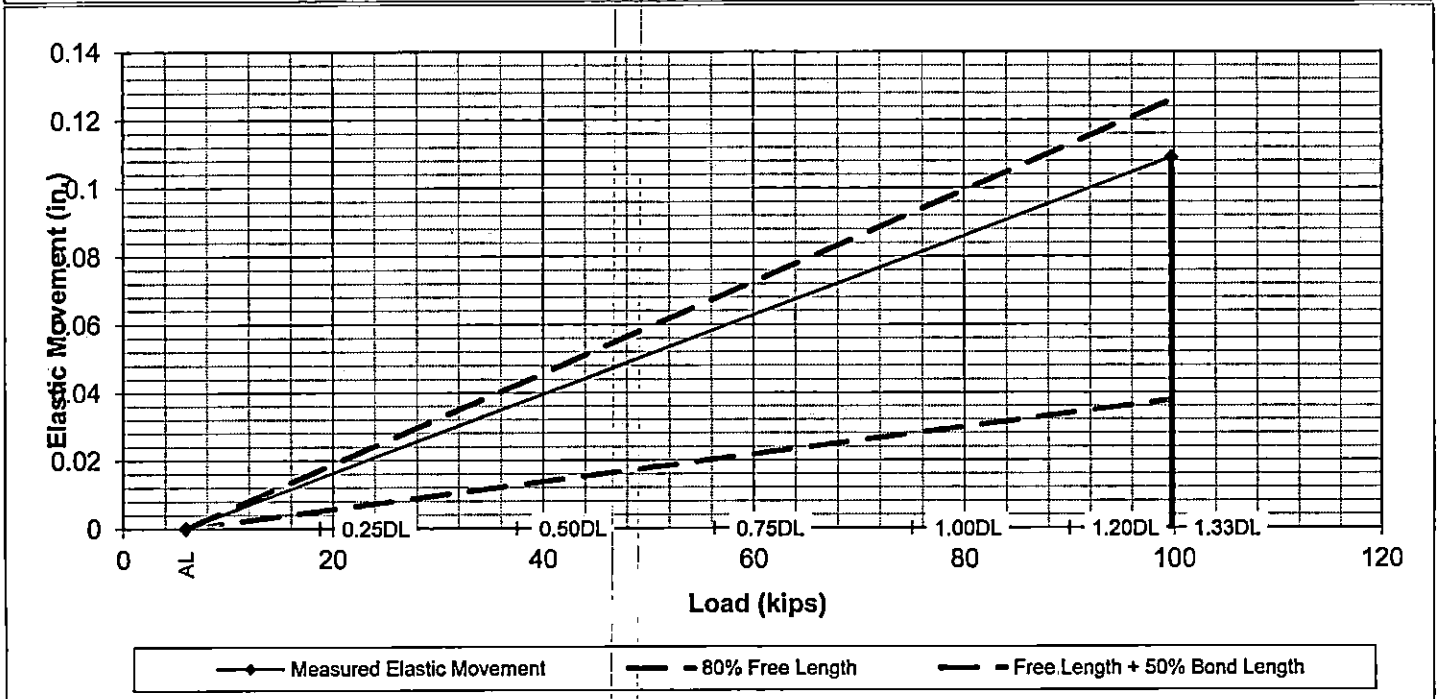
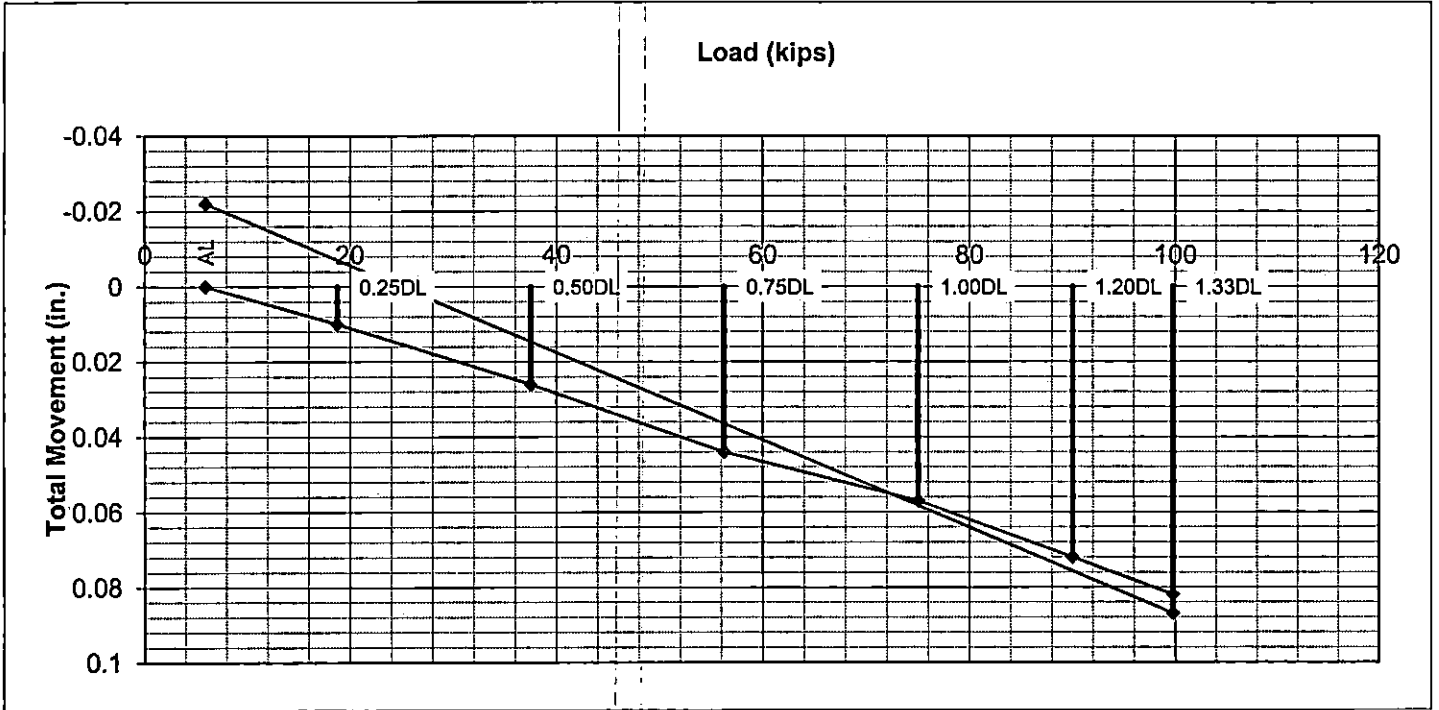
**Lift-off Load**

Pressure Gauge Reading (psi):

Lift-off Load (kips):

Percent Difference from Lock-off Load (%):

≤ 5%



**ROCK ANCHOR PROOF TEST REPORT**

**REMARKS:**

AL = Alignment load (varies between 5 and 15% of DL).  
DL = Design Load

Charles A. Sayre, EI  
Field Engineer  
CAS:jdh  
Copies submitted: Hazen & Sawyer (email)

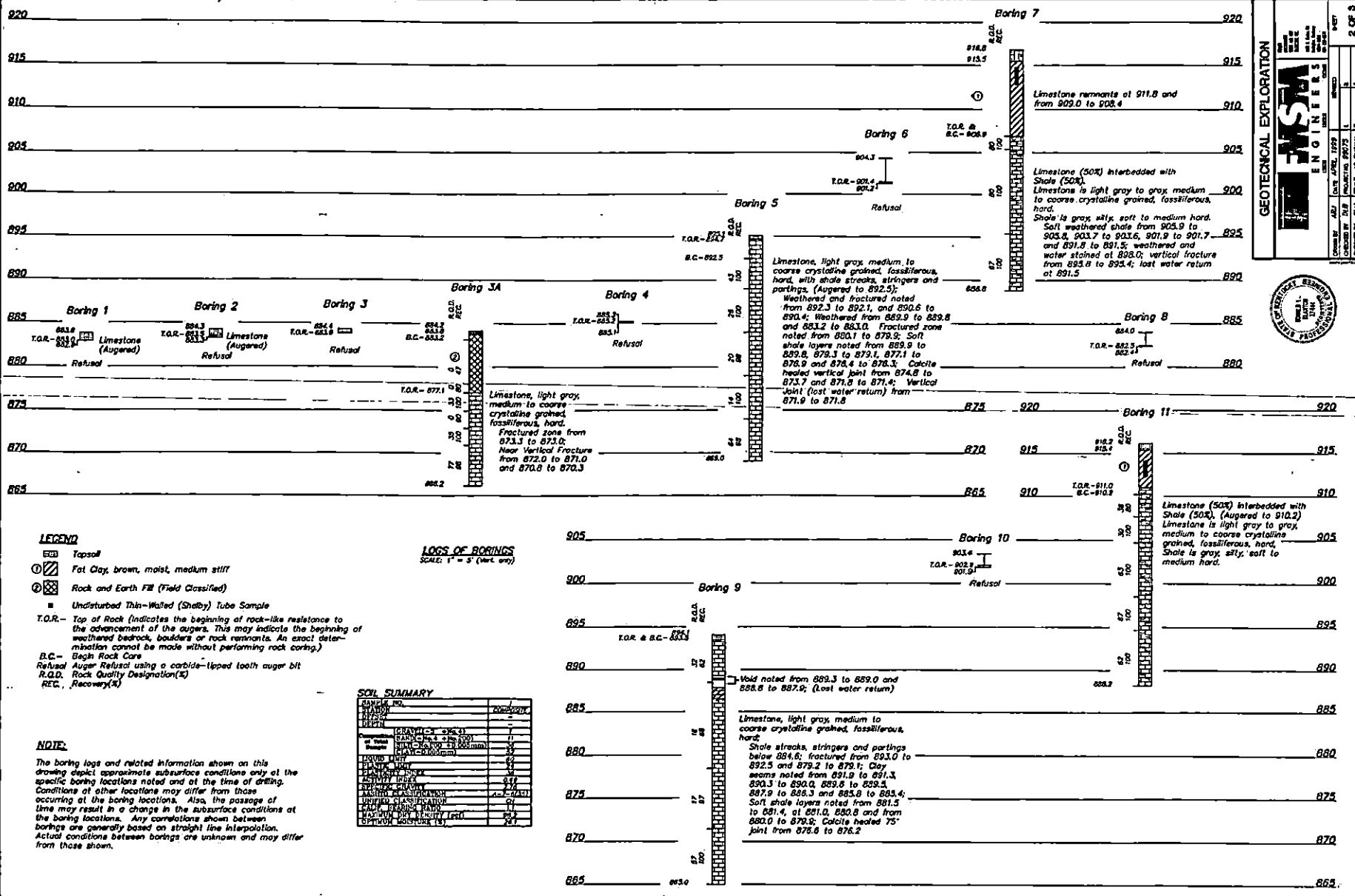


**APPENDIX D**

50029-008: 11/14/2018  
CONFORMED SET

Appendix D LFUCG – WH WWTP FINAL CLARIFIERS  
NO. 7 & NO. 8 STRUCTURAL REPAIRS

THIS PAGE LEFT BLANK INTENTIONALLY



**GEOTECHNICAL EXPLORATION**

**JUSTA ENGINEERS**

100 Corporate Dr. - Lexington, Kentucky 40503 - (606) 721-5000

DATE: APRIL 1978

PROJECT: WEST HICKORY TWP. CONTACT NO. 2

DESIGNED BY: J.E. JUSTA

CHECKED BY: J.E. JUSTA

DATE: APRIL 1978

SCALE: AS SHOWN

SHEET: 2 OF 3



**RRR Engineers, Inc.**

Lexington, Kentucky

100 Corporate Dr. - Lexington, Kentucky 40503 - (606) 721-5000

**LOGS OF BORINGS**

LEXINGTON-FULTON LIBRARY COUNTY GOVERNMENT  
WEST HICKORY TWP. CONTACT NO. 2

SCALE: 1" = 5' (vert. only)

DESIGNED BY: J.E. JUSTA

CHECKED BY: J.E. JUSTA

DATE: APRIL 1978

SCALE: AS SHOWN

SHEET: 2 OF 3

SCALE: 1" = 5' (vert. only)

DESIGNED BY: J.E. JUSTA

CHECKED BY: J.E. JUSTA

DATE: APRIL 1978

SCALE: AS SHOWN

SHEET: 2 OF 3

REVISIONS:

SHEET:

OF

THIS PAGE LEFT BLANK INTENTIONALLY