



MISSOURI  
HIGHWAYS and TRANSPORTATION  
COMMISSION  
JEFFERSON CITY, MISSOURI  
**BID FORMS**  
AND  
**SPECIFICATIONS**  
FOR  
CONSTRUCTING OR IMPROVING  
**DISTRICT – 7**  
**SANITARY SEWER EXTENSION**  
**EL DORADO SPRINGS, MISSOURI**  
**IFB 9-101112**

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	OLSSON ASSOCIATES, ENGINEERED PROJECT, TECHNICAL SPECIFICATIONS MO DNR CONSTRUCTION PERMIT NUMBER CPSE0137 DATED SEPT. 23, 2010 ANNUAL WAGE ORDER #17 CEDAR COUNTY	

### **"EXCESSIVE UNEMPLOYMENT IS IN EFFECT"**

Only Missouri laborers and laborers from nonrestrictive states are allowed by law to be employed on Missouri's public works projects when the unemployment rate exceeds 5 percent for two consecutive months. **(See Sections 290.550 through 290.580 RSMo).**

*Restrictive states are as follows:* Alaska, Arizona, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Idaho, Illinois, Iowa, Maine, Massachusetts, Mississippi, Montana, Nevada, New Jersey, North Dakota, Oklahoma, South Dakota, and the U.S. Virgin Islands, West Virginia and Wyoming.

## **FINAL CHECKLIST BEFORE SUBMITTING PROPOSAL**

- \_\_\_\_\_ 1. Complete the Bid Form by filling in the total dollar amount of the bid; listing any addenda which may have been issued; filling in the dollar amount of the bidder's check or Bid Bond, sign the proper signature line, and supply the required information in connection with the signature for the individual bidder, joint adventurer, or corporation.
  
- \_\_\_\_\_ 2. Submit Bid Bond executed by the bidder and surety. Bidders are required to use the Bid Bond furnished by the Commission or attach cashier's check to Bid Bond form. Personal checks are not accepted.
  
- \_\_\_\_\_ 4. Complete Subcontractor section by listing major subcontractor(s) and general supervisor(s), sign as required.
  
- \_\_\_\_\_ 5. Complete Certification Regarding Missouri Domestic Products Procurement Act section, if applicable.
  
- \_\_\_\_\_ 6. Complete Missouri Service-Disabled Veteran Business Preference, if applicable.
  
- \_\_\_\_\_ 7. If addenda(s) are issued attach to the back of the bid package. Copy addenda and add to the appropriate section of the orange bound Request for Proposal and retain for your records.

## **NEWSPAPER ADVERTISEMENT**

### **Notice to Contractors**

MoDOT will receive bids at its General Services-Facilities section, 830 MoDOT Drive, Jefferson City, MO until 3:00 PM November 12, 2010 for constructing a Sewer System at El Dorado Springs. Contact Lynn Ferguson at 573-751-4879 or [Lynn.Ferguson@modot.mo.gov](mailto:Lynn.Ferguson@modot.mo.gov) to obtain plans, forms, and information or download them at no charge from <http://www.modot.org/gsbidding/>. A pre-bid conference is scheduled for Nov. 3, 2010 at the District 7, Regional Maintenance Facility, Rt. 54, 1.0 Mi. E of Rt. 32, El Dorado Springs, MO 64744 at 10:00 AM.

00020

**INVITATION TO BID**

Notice is given hereby that the Missouri Department of Transportation will accept bids for construction of the project marked "**9-101112 Sewer – El Dorado Springs**", according to Drawings and Specifications, and described in general as:

Extend sanitary sewer.

Sealed bids will be received by the Missouri Department of Transportation at its Central Office, 830 MoDOT Drive, PO Box 270, Jefferson City, MO 65102-0270 until 3:00 P.M., November 12, 2010.

Bids will be opened and read aloud at that time and that place. Bids received after that time will not be accepted.

Contact Lynn Ferguson at 573-751-4879 or [Lynn.Ferguson@modot.mo.gov](mailto:Lynn.Ferguson@modot.mo.gov) to obtain plans, forms, and information or download them at no charge from <http://www.modot.mo.gov/gsbidding/>.

Prevailing wages as established by the Missouri Department of Labor and Industrial Relations, for Audrain and Shelby Counties, as shown herein will apply.

Bid securities in the amount of 5% of the bid will be required to accompany bids.

Bids must be made on forms provided by the Commission. The Commission reserves the right to reject any or all bids and to waive irregularity in the bids and the bidding. No bid may be amended or withdrawn after the bid is opened.

Project Location: District 7, Regional Maintenance Facility, Rt. 54, 1.0 Mi. E of Rt. 32, El Dorado Springs, MO 64744 at 10:00 AM.

A pre-bid conference is scheduled for Nov. 3, 2010 at the District 7, Regional Maintenance Facility, Rt. 54, 1.0 Mi. E of Rt. 32, El Dorado Springs, MO 64744 at 10:00 AM.

**BIDDER REQUIREMENTS**

1. SC OPE OF WORK

Extend sanitary sewer.

2. BID INSTRUCTIONS

In order to receive consideration, bids must be made in strict accordance with the following.

- A. Make bids, upon the forms provided herein, properly signed and with all items filled out. Do not change the wording of the bid form and do not add words to the bid form. Unauthorized conditions, limitations or provisions attached to the bid will be cause for rejection of the bid.
- B. No telegraphic bid or telegraphic modification of a bid will be considered. No bids received after the time fixed for receiving them will be considered. Late bids will be returned to the bidder unopened.
- C. Address bids to the Missouri Department of Transportation, and deliver to the address given in the Invitation for Bid, on or before the day and hour set for opening the bids. Enclose each bid in a sealed envelope bearing the title of the Work, the name of the bidder, and the date and hour of the bid opening. Submit only the original signed copy of the bid. It is the sole responsibility of the bidder to see that the bid is received on time.

3. B ONDS

- A. Each proposal shall be accompanied by a Bid Bond, Certified Check, Cashier's Check or Bank Money Order payable to the Director of Revenue – Credit State Road Fund for an amount equal to Five Percent (5%) of the amount of the BID submitted. This is to act as a guarantee that the bidder, if awarded the contract, will furnish an acceptable performance and payment bond (Contract Bond) or a cashier's check, a bank money order or a certified check made payable to "Director of Revenue – Credit State Road Fund" in an amount equal to One Hundred (100%) of the contract price.
- B. If a BID BOND is used (in lieu of a certified check, cashier's check, or bank money order), it must be in the form provided and executed by the bidder as principal and by a surety company authorized to do business in the State of Missouri as surety. The agent executing the same on behalf of the surety company must attach a current Power of Attorney setting forth his authority to execute the bond involved.
- C. Certified Checks, Cashier's Checks or Bank Money Orders of unsuccessful bidders will be returned as soon as the award is made. The checks or bank money orders of the successful bidder(s) will be retained until the contract is executed and a satisfactory Performance and Payment (Contract Bond) is furnished. Bid Bonds will not be returned except on specific request of the bidder.

4. INVOICING AND PAYMENT

- A. MoDOT is exempt from paying Missouri Sales Tax, Missouri Use Tax and Federal Excise Tax. However, the successful bidder to whom the contract is awarded, (hereinafter, "contractor") may themselves be responsible for the payment of taxes on materials they purchase to fulfill the contract. A Project Tax Exemption Certificate will be furnished to the successful bidder upon request if applicable.
- B. Each invoice should be itemized in accordance with items listed on the contract in accordance with Section 01019, Contract Considerations, Applications for Payment provisions. Failure to comply with this requirement may delay processing of invoices for payment.
- C. Unless otherwise provided for in the solicitation documents, payment for all equipment, supplies, and/or services required herein shall be made in arrears. The Commission shall not make any advance deposits.
- D. The Commission assumes no obligation for equipment, supplies, and/or services shipped or provided in excess of the quantity ordered. Any authorized quantity is subject to the Commission's rejection and shall be returned at the Contractor's expense.
- E. The Commission reserves the right to purchase goods and services using the state-purchasing card.

5. EXAMINATION OF DOCUMENTS AND SITE OF WORK

- A. Before submitting a bid, each bidder shall examine the Drawings carefully, read the Specifications and all other proposed Contract Documents, and visit the site of the work. Each bidder shall fully inform themselves, prior to bidding, as to existing conditions and limitations under which the Work is to be performed and shall include in his bid a sum to cover the cost of items necessary to perform the Work, as set forth in the proposed Contract Documents. No allowance will be made to a bidder because of lack of such examination or knowledge. The submission of a bid will be considered conclusive evidence that the bidder has made such examination.
- B. The contract price shall include any necessary permits and licenses required by law incidental to the work. Local ordinances requiring building permits are not applicable to the state. Contractor will comply with local laws involving safety in the prosecution of the work.

6. INTERPRETATION

No oral interpretations will be made to any bidder as to the meaning of the plans and specifications or the acceptability of alternate products, materials, form or type of construction. Every request for interpretation shall be made in writing and submitted with all supporting documents not less than ten (10) days before opening of bids. The request shall be sent directly to the Senior Facilities Designer. Every interpretation made to a bidder will be in the form of an addendum and will be sent as promptly as is practicable to all persons to whom plans and specifications have been issued. All such addenda shall become part of the contract documents.

7. PROOF OF COMPETENCY OF BIDDER

A bidder may be required to furnish evidence, satisfactory to the Commission, that he and his proposed subcontractor(s) have sufficient means and experience in the types of work called for to assure completion of the Contract in a satisfactory manner.

8. WITHDRAWAL OF BIDS

After the bid/proposal opening, a vendor may be permitted to withdraw a bid/proposal prior to award at the sole discretion of the division if there is a verifiable error in the bid/proposal and enforcement of the bid would impose an unconscionable hardship on the vendor. This withdrawal will be considered only after receipt of a written request and supporting documentation from the vendor. Withdrawal shall be the vendor's sole remedy for an error other than an obvious clerical error. Withdrawal of a bid/proposal may result in forfeiture of the bid/proposal bond.

9. AWARD OR REJECTION OF BIDS

- A. The Contract, if awarded, will be made on an **“All or None” basis using the “lowest and best” principle of award**, subject to the Commission's right to reject any or all bids and to waive informality and irregularity in the bids and in the bidding.

10. CONTRACT DOCUMENTS

- A. By submitting a bid, the bidder agrees to furnish any and all equipment, supplies and/or construction services specified in the solicitation documents, at the price(s) stated in their bid, pursuant to all requirements and specifications contained therein.
- B. A binding contract, contract documents, shall consist of: (1) the solicitation documents with any drawings and/or attachment/exhibits, amendments thereto, and/or Best and Final Offer (BAFO) request(s) with any changes/additions, (2) the Contractor's submitted pricing, and (3) the Commission's acceptance of the bid by purchase order or post-award contract.
- C. A notice of award does not constitute an authorization for shipment of equipment or supplies or a directive to proceed with services. Before providing equipment, supplies and/or services, the Contractor must receive a properly authorized purchase order and/or notice to proceed.
- D. The contract expresses the complete agreement of the parties and performance shall be governed solely by the specifications and requirements contained therein. Any change, whether by modification and/or supplementation, must be accomplished by a formal contract amendment signed and approved by and between the duly authorized representative of the Contractor and the duly authorized representative of the Commission, by a modified purchase order prior to the effective date of such modification. The Contractor expressly and explicitly understands and agrees that no other method and/or no other

document, including correspondence, acts, and oral communications by or from any person, shall be used or construed as an amendment or modification.

- E. Failure to execute the contract and file acceptable performance payment (Contract Bond) or cashier's check, bank money order or certified check within after the contract has been mailed to the bidder shall be just cause for the cancellation of the award and the forfeiture of the proposal guaranty. Award may then be made to the next lowest responsible bidder, or the work may be re-advertised and performed under contract or otherwise, as the Commission may decide. No contract shall be considered effective until it has been executed by all parties thereto.

#### 11. NONDISCRIMINATION

- A. The successful bidder understands that this project involves state funds and the successful bidder awarded the contract will be required to comply with the Executive Order 05-30 of the Governor of the State of Missouri dated September 8, 2005. This order stipulates that there shall be no discriminatory employment practices by the Contractor or his subcontractors, if any, based on race, sex, religion, national origin, age, color, disability, or veteran status. The undersigned Contractor or his subcontractors, if any, shall give written notice of their commitments under this clause to any labor union with which they have bargaining or other agreements.
- B. The Contractor shall comply with the Regulations relative to nondiscrimination in federally-assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
- C. All solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of the Contractor's obligations under this contract and the Regulations, will be relative to nondiscrimination on the grounds of race, color, or national origin.
- D. Sanctions for Noncompliance: In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, MoDOT shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to: (i) withholding of payments to the Contractor under the contract until the Contractor complies, and/or, (ii) cancellation, termination or suspension of the contract, in whole or in part.

#### 12. SUBMITTALS

Review of Submittals. The Architect/Engineer/Designer review of submittals is only for the limited purpose of checking for conformance with information given and seeing if they conform to design intent. The General Services Facilities Manager is not responsible for determining the accuracy of measurements and completeness of details, for verifying quantities, or for checking fabrication or installation procedures. The General Services Facilities Manager's review does not relieve the contractor of his or her responsibilities under the contract documents. The submittal process shall be carried out as outlined in Section 01300, Submittals.

#### 13. WORK QUALITY

- A. Inspection of Work. The General Services Facility Operations Supervisor or designated representative shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other data and records relating to the work. If requested by the General Services-Facility Operations Supervisor or designated representative, the contractor shall at any time before final acceptance of the work uncover any portion of the finished work as directed for inspection. After examination, the contractor shall restore said portions of the work to the standards required by the contract. Should the work thus exposed and examined prove acceptable, the actual cost of uncovering, removing and replacing shall be paid by the Commission. Should the work so exposed and examined prove unacceptable, the uncovering, removing and replacing shall be at the expense of the contractor.
- B. Defective Work. All work which has been rejected shall be remedied, or if necessary, removed and replaced in an acceptable manner by the contractor at its expense. If the contractor fails to remedy or replace such defective work immediately after receiving written notice from the General Services-Facility Operations Supervisor or designated representative, the Commission may employ labor to correct the defective work, and the cost incurred in making such corrections shall be deducted from the payment due or to become due the contractor under this contract.
- C. Contractor will provide a one-year warranty for parts and labor on all building material, and equipment or a standard manufacturer's warranty which ever is greater. All warranties, including extended service agreements shall begin on the date of Final Acceptance of this project.

- D. Contractor's Responsibility for Work. Until the General Services-Facility Operations Supervisor or designated representative, accepts the work, it shall be in the custody and under the charge and care of the contractor. Contractor shall rebuild, repair, restore or make good at its own expense any lost or stolen Commission-owned material and all injuries or damages to any portion of the work caused by action of the elements or from any other reason before its completion and final acceptance. Issuance of a payment estimate on any part of the work done will not be considered as final acceptance of any work completed up to that time.
- E. Preservation of Utilities and Monuments. The contractor shall be responsible for the preservation of all public and private utilities, wires, lines, pipes, poles, cables, and conduit at the site of the work and shall use every precaution necessary to prevent damage or injury thereto. The contractor shall not disturb or damage any land monument or property landmark until an authorized agent has witnessed or otherwise referenced, their location and shall not remove them until directed by General Services Facilities Manager.
- F. Cooperation with Other Contractors. The contractor shall arrange its work so as not to interfere with the operations of other contractors of the Commission which might be engaged in performing adjacent or nearby work. Whenever work being done by other contractors is contiguous or related to the work involved in this contract, the respective rights of the various contractors will be determined by the General Services-Facility Operations Supervisor or designated representative in order to secure the completion of the work under all contracts in general harmony.
- G. The contractor will be required to remove from the Commission's property all debris.
- H. Temporary Suspension of Work. The General Services-Facility Operations Supervisor or designated representative shall have authority to suspend work, wholly or in part, for such period or periods of time as he may deem necessary when weather or other conditions are such that in the opinion of the General Services-Facility Operations Supervisor or designated representative the work may be done at a later time with advantage to the Commission or for failure on the part of the contractor to comply with any of the provisions of the contract. The contractor may suspend work for reasonable cause with written approval of the General Services-Facility Operations Supervisor or designated representative. Liquidated damages shall not accrue during the period in which work is suspended with the approval of the General Services-Facility Operations Supervisor or designated representative, however, if the suspension is because of the contractor's failure to comply to any of the provisions of the contract, the contractor shall not be entitled to an extension of completion time nor to a waiver of liquidated damages. In the event work is suspended, the contractor shall store all materials in a manner that will protect them from damage, and shall take every precaution to prevent damage or deterioration of, the portions of the work completed. If work has been discontinued for any reason, the contractor shall give the General Services-Facility Operations Supervisor or designated representative written notice at least forty-eight (48) hours before resuming operations.

#### 14. CHANGE ORDERS

- A. General. All departures from the plans and specifications will be considered unauthorized unless, before proceeding with the work, the contractor has had delivered to it a change order, signed by the General Services-Facility Operations Supervisor or designated representative, authorizing and directing such changes or departures. All unauthorized work shall be at the contractor's expense and the General Services-Facility Operations Supervisor or designated representative may order such unauthorized work removed and replaced at the contractor's expense.
- B. Overhead and Profit on Change Orders. The percentages for overhead and profit charged on Change Orders and Field Work Authorizations shall be negotiated and may vary according to the nature, extent and complexity of the work involved. However, the overhead and profit for the contractor or subcontractor actually performing the work shall not exceed 15%. When one or more tiers of subcontractors are used, in no event shall any contractor or subcontractor receive as overhead and profit more than 7% of the cost of the work performed by any of his subcontractors. In no case shall the total overhead and profit paid by the owner on any change order exceed twenty five percent (25%) of the cost of materials, labor and equipment necessary to put the change order work in place.
- C. Contractor's Procedure for Claims. If the contractor considers additional compensation may be due for work or material not clearly covered in the contract or ordered in writing by the General Services-Facility Operations Supervisor or designated representative as extra work, or if additional compensation may be requested beyond the scope of such provisions, the contractor shall notify the General Services-Facility Operations Supervisor or designated representative in writing of the intention to make a claim before beginning the work in question. If notification is not given and the General Services-Facility Operations Supervisor or designated representative is not afforded proper facilities by contractor to provide necessary inspection and for keeping strict account of actual cost, the contractor agrees to waive any claims for additional compensation. Notice by the contractor, and the fact that the General Services-Facility Operations Supervisor or designated representative has kept account of the cost shall not

be construed as substantiating the validity of the claim. The contractor shall file a written notice of claim for additional compensation in triplicate within 60 days after completing the work in question.

- a. If the claim is against the Commission, the notice of claim shall be personally delivered, or sent by certified mail to the office of the Secretary of the Commission in Jefferson City, Missouri. All notices of claims shall contain an itemized statement showing completely and fully the items and amounts forming the basis of the claim.
- b. Any claim or an item of any claim, not included in the notice and statement, or any claim included but not clearly defined and specifically set out and itemized or any claim not filed within the time and in the manner provided, shall be forever waived and shall neither constitute the basis of nor be included in any legal action, counterclaim, set-off, or arbitration.
- c. All claims filed with Missouri Highway and Transportation Commission's Secretary will be forwarded to the Missouri Department of Transportation's Claims Committee.

#### 15. INSURANCE

- A. The Contractor shall maintain or cause to be maintained at Contractor's own expense commercial general liability, automobile liability, and worker's compensation insurance against negligent acts, errors or omissions of the Contractor, or its subcontractors and anyone directly or indirectly employed by any of them. Any insurance policy required as specified in this Section shall be written by a company that is licensed and authorized to issue such insurance in the state of Missouri and shall provide insurance coverage for not less than the following limits of liability:
  - a. General Liability: Not less than \$500,000 for any one person in a single accident or occurrence, and not less than \$3,000,000 for all claims arising out of a single occurrence;
  - b. Automobile Liability: Not less than \$500,000 for any one person in a single accident or occurrence, and not less than \$3,000,000 for all claims arising out of a single occurrence;
  - c. Missouri State Workmen's Compensation policy or equivalent in accordance with state law.
  - d. Upon request from the Commission, the Contractor shall provide the Commission with certificates of insurance evidencing the required coverage and that such insurance is in effect.

#### 16. CONSTRUCTION TIME AND LIQUIDATED DAMAGES

- A. Time of Completion - If this bid is accepted, it is hereby agreed that work will begin not later than the date specified in the "Notice to Proceed" and will diligently be prosecuted in order to complete the work and billing within 60-working days from the date specified. Completion of work will be based on FINAL ACCEPTANCE of the building; "SUBSTANTIAL COMPLETION" will not be accepted as basis for completion.
- B. Liquidated Damages - In the event the successful Contractor fails to deliver the material within the time specified, the Department and the public will sustain damages because of such delay in delivery, the exact extent of which would be difficult to ascertain, and in order to liquidate such damage in advance it is agreed that the sum of three-hundred dollars (\$300.00) per day, per item, for each assessable calendar day on which the delivery has not been completed, is reasonable and the best estimate which the parties can arrive at as liquidated damages, and it is therefore agreed that said amount will be withheld from payments due the Contractor or otherwise collected from the Contractor as liquidated damages. Saturdays, Sundays, holidays and days whereas the Department has suspended work shall not be assessable days.
- C. A working day. Is defined as any day when, soil and weather conditions would permit the major operation of the project for six hours or more unless other unavoidable conditions prevent the contractor's operation. If conditions require the contractor to stop work in less than six hours, the day will not be counted as a working day. Working days will begin as soon as notice to proceed is issued. In order for MoDOT not to change a workday due to unavoidable conditions, the contractor must have enough forces, equipment, and materials on site to begin the project. The contractor must notify MoDOT inspector before 12:00 noon of said working day if forces will not be present.

## 17. EXECUTIVE ORDER

- A. The Contractor shall comply with all the provisions of Executive Order 07-13, issued by the Honorable Matt Blunt, Governor of Missouri, on the sixth (6<sup>th</sup>) day of March, 2007. This Executive Order, which promulgates the State of Missouri's position to not tolerate persons who contract with the state engaging in or supporting illegal activities of employing individuals who are not eligible to work in the United States, is incorporated herein by reference and made a part of this Agreement.
  - B. "By signing this Agreement, the Contractor hereby certifies that any employee of the Contractor assigned to perform services under the contract is eligible and authorized to work in the United States in compliance with federal law."
  - C. In the event the Contractor fails to comply with the provisions of the Executive Order 07-13, or in the event the Commission has reasonable cause to believe that the contractor has knowingly employed individuals who are not eligible to work in the United States in violation of federal law, the Commission reserves the right to impose such contract sanctions as it may determine to be appropriate, including but not limited to contract cancellation, termination or suspension in whole or in part or both.
  - D. The Contractor shall include the provisions of this paragraph in every subcontract. The Contractor shall take such action with respect to any subcontract as the Commission may direct as a means of enforcing such provisions, including sanctions for noncompliance.
18. Missouri law, 292.675 RSMo, requires the Contractor and its subcontractor(s) to provide a ten-hour occupational safety and health administration (OSHA) construction safety program (or a similar program approved by the Missouri Department of Labor and Industrial Relations as a qualified substitute) for their on-site employees (laborers, workmen, drivers, equipment operators, and craftsmen) who have not previously completed such a program and are directly engaged in actual construction of the improvement (or working at a nearby or adjacent facility used for construction of the improvement). The Contractor and its subcontractor(s) shall require all such employees to complete this ten-hour program, pursuant to 292.675 RSMo, unless they hold documentation on their prior completion of said program. Penalties for non-compliance include Contractor forfeiture to the Commission in the amount of \$2,500, plus \$100 per contractor and subcontractor employee for each calendar day such employee is employed beyond the elapsed time period for required program completion under 292.675 RSMo.

## 19. EMPLOYMENT OF UNAUTHORIZED ALIENS

- A. Pursuant to RSMo 285.530 (1), no business entity or employer shall knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the state of Missouri. As a condition for the award of any contract or grant in excess of five thousand dollars by the state or by any political subdivision of the state to a business entity, or for any business entity receiving a state-administered or subsidized tax credit, tax abatement, or loan from the state, the business entity shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. Every such business entity shall sign an affidavit affirming that it does not knowingly employ any person who is unauthorized alien in connection with the contracted services. [RSMO 285.530 (2)] A copy of the affidavit referenced above is provided within this document.
- B. E-Verify is an example of a federal work authorization program. Acceptable enrollment and participation documentation consists of **completed** copy of the E-Verify Memorandum of Understanding (MOU). For vendors that are not already enrolled and participating in a federal work authorization program, E-Verify is available at [http://www.dhs.gov/xprevprot/programs/gc\\_1185221678150.shtm](http://www.dhs.gov/xprevprot/programs/gc_1185221678150.shtm).

## 20. PREFERENCE NCES

- A. In the evaluation of bids, preferences shall be applied in accordance with Chapter 34 RSMo. Contractors should apply the same preferences in selecting subcontractors.
- B. By virtue of statutory authority, RSMo. 34.076 and 34.350 to 34.359, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, made or grown within the State of Missouri. Such preference shall be given when quality is equal or better and delivered price is the same or less.
  - 1) If attached, the document entitled "PREFERENCE IN PURCHASING PRODUCTS" should be completed and returned with the solicitation documents.

- 2) If attached, the document entitled “MISSOURI DOMESTIC PRODUCTS PROCUREMENT ACT” should be completed and returned with the solicitation documents. Applies if bid is Twenty-Five Thousand Dollars (\$25,000.00) or more.
- C. By virtue of statutory authority, RSMo 34.074, a preference will be given all contracts for the performance of any job or service to service-disabled veteran business either doing business as Missouri firms, corporations, or individuals; or which maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less or whenever competing bids, in their entirety, are comparable.
  - 1) If attached, the document entitled “MISSOURI SERVICE-DISABLED VETERAN PREFERENCE” should be completed and returned with the solicitation documents.
- D. In the event of a tie of low bids, the MHTC reserves the right to establish the method to be used in determining the award.

21. GENERAL PERFORMANCE

- A. This work is to be performed under the general supervision and direction of the Missouri Department of Transportation (MoDOT) and, if awarded any portion of the work, the Contractor agrees to furnish at his own expense all labor and equipment required to complete the work, it being expressly understood that this solicitation is for completed work based upon the price(s) specified and is not a solicitation for rental of equipment or employment of labor by MoDOT, and MoDOT is to have no direction or control over the employees used by the Contractor in performance of the work.

22. APPLICABLE LAWS AND REGULATIONS

- A. The contract shall be construed according to the laws of the State of Missouri. The Contractor shall comply with all local, state, and federal laws and regulations related to the performance of the contract.
- B. The Contractor must be registered and maintain good standing with the Secretary of State of the State of Missouri and other regulatory agencies, as may be required by law or regulations. Prior to the issuance of a purchase order and/or notice to proceed, the Contractor may be required to submit to MoDOT a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.
  - 1) Prior to the issuance of a purchase order and/or notice to proceed, all out-of-state Contractors providing services within the state of Missouri must submit to MoDOT a copy of their current Transient Employer Certificate from the Department of Revenue, in addition to a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.
- C. The exclusive venue for any legal proceeding relating to or arising, out of the contract shall be in the Circuit Court of Cole County, Missouri.

23. REMEDIES AND RIGHTS

- A. No provision in the contract shall be construed, expressly or implied, as a waiver by the MHTC of any existing or future right and/or remedy available by law in the event of any claim by the MHTC of the Contractor's default or breach of contract.
- B. The Contractor agrees and understands that the contract shall constitute an assignment by the Contractor to the MHTC of all rights, title and interest in and to all causes of action that the Contractor may have under the antitrust laws of the United States or State of Missouri for which causes of action have accrued or will accrue as the result of or in relation to the particular equipment, supplies, and/or services purchased or produced by the Contractor in the fulfillment of the contract with the MHTC.
- C. In the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request MoDOT to enter into such litigation to protect the interests of the MHTC, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

24. CANCELLATION OF CONTRACT

The MHTC may cancel the contract at any time for a material breach of contractual obligations or for convenience by providing the Contractor with written notice of cancellation. Should the MHTC exercise its right to cancel the contract for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the Contractor.

## 25. BANKRUPTCY OR INSOLVENCY

Upon filing for any bankruptcy or insolvency proceeding by or against the Contractor, whether voluntary or involuntary, or upon the appointment of a receiver, trustee, or assigned the benefit or creditors, the Contractor must notify MoDOT immediately. Upon learning of any such actions, the MHTC reserves the right, at its sole discretion, to either cancel the contract or affirm the contract and hold the contractor responsible for damages. Inventions, Patents, and Copyrights

## 26. INVENTIONS, PATENTS, AND COPYRIGHTS

The Contractor shall defend, protect, and hold harmless the MHTC, its officers, agents, and employees against all suits of law or in equity resulting from patent and copyright infringement concerning the Contractor's performance or products produced under the terms of the contract.

## 27. INSPECTION AND ACCEPTANCE

- A. No equipment, supplies, and/or services received by MoDOT pursuant to a contract shall be deemed accepted until MoDOT has had reasonable opportunity to inspect said equipment, supplies, and/or services.
- B. All equipment, supplies, and/or services which do not comply with the specifications and/or requirements or which are otherwise unacceptable or defective may be rejected. In addition, all equipment, supplies, and/or services which are discovered to be defective or which do not conform to any warranty of the Contractor upon inspection (or at any later time if the defects contained were not reasonably ascertainable upon the initial inspection) may be rejected.
- C. The MHTC reserves the right to return any such rejected shipment at the Contractor's expense for full credit or replacement and to specify a reasonable date by which replacements must be received.
- D. The MHTC's right to reject any unacceptable equipment, supplies, and/or services shall not exclude any other legal, equitable or contractual remedies the MHTC may have.

## 28. STATUS OF INDEPENDENT CONTRACTOR

The Contractor represents itself to be an independent Contractor offering such services to the general public and shall not represent itself or its employees to be an employee of the MHTC. Therefore, the Contractor shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, etc., and agrees to indemnify, save and hold the MHTC, its officers, agents and employees harmless from and against any and all losses (including attorney fees) and damage of any kind related to such matters.

## 29. INDEMNIFICATION

The Offeror shall defend, indemnify and hold harmless the Commission, including its members and department employees, from any claim or liability whether based on a claim for damages to real or personal property or to a person for any matter relating to or arising out of the Offeror's performance of its obligations under this Agreement.

## 30. DEFINITIONS

Architect/Engineer/Designer: When the term "Architect or Engineer or Designer" is used herein, it shall refer to Larry Carver, [Senior Facilities Designer], (573) 526-7934 or Doug Record [General Services Manager - Facilities] Missouri Department of Transportation, General Services (573) 526-7937, FAX (573) 526-6948. MoDOT Inspector or Facility Operations Supervisor: When the term "MoDOT Inspector or Facility Operations Supervisor" is used herein, it shall refer to those MoDOT individuals authorized to perform site inspections by Todd Roth, [Facility Operations Supervisor] District 3, General Services Division, (573) 231-6593, FAX (573) 248-2613 Owner: When the term "Owner" is used herein, it shall refer to Missouri Department of Transportation (MoDOT).

**PREFERENCES IN PURCHASING PRODUCTS**

DATE: \_\_\_\_\_

The bidders attention is directed to Section 34.076 RSMo 2000 which gives preference to Missouri corporations, firms, and individuals when letting contracts or purchasing products.

Bids/Quotations received will be evaluated on the basis of this legislation.

All vendors submitting a bid/quotation must furnish ALL information requested below.

FOR CORPORATIONS:

State \_\_\_\_\_ in which incorporated: \_\_\_\_\_

FOR OTHERS:

State of domicile: \_\_\_\_\_

FOR ALL VENDORS:

List \_\_\_\_\_ address of Missouri offices or places of business:

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

**THIS SECTION MUST BE COMPLETED AND SIGNED:**

FIRM NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

BY (signature required): \_\_\_\_\_

Federal Tax I.D. #: \_\_\_\_\_ if no Federal Tax I.D. # - list Social Security #: \_\_\_\_\_

NOTE: For bid/quotation to be considered, the "Preference in Purchasing Products" form must be on file in the General Services (Procurement) Division and must be dated in the current calendar year.

**MISSOURI DOMESTIC PRODUCTS PROCUREMENT ACT**

The bidder’s attention is directed to the Missouri Domestic Products Procurement Act, Sections 34.350 to 34/359, RsMO, which requires all manufactured goods or commodities used or supplied in the performance of this contract or any subcontract to be manufactured or produced in the United States.

Section 34.355, RsMO, requires the vendor or contractor to certify his compliance with Section 34.353 and, if applicable, Section 34.359, RsMO, at the time of bidding and prior to payment. Failure to comply with Section 34.353, RsMO, during the performance of the contract and to provide certification of compliance prior to payment will result in nonpayment for those goods or commodities.

Section 34.353.2, RsMO, specifies that it does not apply where the total contract is less than Twenty-Five Thousand Dollars (\$25,000.00). If your total bid is Twenty-Five Thousand Dollars (\$25,000.00) or more, you must complete this form as directed below.

Failure to complete and return this document with this bid will cause the State to presume the manufactured goods or products listed in the bid are not manufactured or produced in the United States, and the bid will be evaluated on that basis. Please read the certification appearing below on this form.

If all the goods or products specified in the attached bid which the bidder proposes to supply to the State shall be manufactured or produced in the “United States” as defined in Section 34.350, RsMO, check the box at left.

If only one item of any particular goods or products specified in the attached bid is manufactured or produced in the “United States” as defined in Section 34.350, RsMO, check the box at left and list the items (or item number) here:

\_\_\_\_\_

If any or all of the goods or products specified in the attached bid which the bidder proposes to supply to the State are not manufactured or produced in the “United States” as defined in Section 34.350, RsMO, then: (a) check the box at left; (b) list below, by item (or item number), the country other than the United States where each good or product is manufactured or produced; and (c) check the boxes to the left of the paragraphs below if applicable and list the corresponding items (or item numbers) in the spaces provided.

Item (or item number)	Location Where Item Manufactured or Produced

(attach an additional sheet if necessary)

The following specified goods or products cannot be manufactured or produced in the United States in sufficient quantities or in time to meet the contract specifications. Items (or item numbers): \_\_\_\_\_

The following specified goods or products must be treated as manufactured or produced in the United States, in accordance with an existing treaty, law, agreement, or regulation of the United States, including a treaty between the United States and any foreign country regarding export-import restrictions or international trade. Items (or item numbers): \_\_\_\_\_

**CERTIFICATION**

By submitting this document, completed as directed above, with a bid, the bidder certifies under penalty of making false declaration (Section 575.060, RsMO) that the information contained in this document is true, correct and complete, and may be relied upon by the State in determining the bidders qualifications under and in compliance with the Missouri Domestic Products Procurement Act.

The bidder’s failure to complete and return this document with the bid as directed above will cause the State to presume the manufactured goods or products listed in the bid are not manufactured or produced in the United States, and the bid will be evaluated on that basis pursuant to Section 34.353.3(2), RsMO.

MISSOURI SERVICE-DISABLED VETERAN BUSINESS PREFERENCE

By virtue of statutory authority, RSMo 34.074, a preference will be given all contracts for the performance of any job or service to service-disabled veteran business either doing business as Missouri firms, corporations, or individuals; or which maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less or whenever competing bids, in their entirety, are comparable.

Definitions:

Service-Disabled Veteran is defined as any individual who is disabled as certified by the appropriate federal agency responsible for the administration of veterans' affairs.

Service-Disabled Veteran Business is defined as a business concern:

- a. Not less than fifty-one (51) percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than fifty-one (51) percent of the stock of which is owned by one or more service-disabled veterans; and
- b. The management and daily business operations of which are controlled by one or more service-disabled veterans.

If an bidder meets the definitions of a service-disabled veteran and a service-disabled veteran business as defined in 34.074 RSMo and is either doing business as a Missouri firm, corporation, or individual; or maintains a Missouri office or place of business, the bidder must provide the following with the proposal in order to receive the Missouri service-disabled veteran business preference over a non-Missouri service-disabled veteran business when the quality of performance promised is equal or better and the price quoted is the same or less or whenever competing proposals, in their entirety, are comparable:

- a. A copy of a letter from the Department of Veterans Affairs (VA), or a copy of the bidder's discharge paper (DD Form 214, Certificate of Release or Discharge from Active Duty) from the branch of service the bidder was in, stating that the bidder has a service-connected disability rating ranging from 0 to 100% disability; and
- b. A completed copy of this exhibit

(NOTE: For ease of evaluation, please attach copy of the above-referenced letter from the VA or a copy of the bidder's discharge paper to this Exhibit.)

By signing below, I certify that I meet the definitions of a service-disabled veteran and a service-disabled veteran business as defined in 34.074 RSMo and that I am either doing business as a Missouri firm, corporation, or individual; or maintain Missouri offices or places of business at the location(s) listed below.

Veteran Information

Business Information

\_\_\_\_\_  
Service-Disabled Veteran's Name, (Please Print)

\_\_\_\_\_  
Service-Disabled Veteran Business Name

\_\_\_\_\_  
*Service-Disabled Veteran's Signature*

\_\_\_\_\_  
Missouri Address of Service-Disabled Veteran Business

00301

**BID FORM**

To: The Missouri Highway and Transportation Commission  
PO Box 270  
Jefferson City, Missouri 65102

1. The undersigned, having examined the proposed Contract Documents titled: **“9-101112 Sewer – El Dorado Springs”** and having visited the site and examined the conditions affecting the work, hereby proposes and agrees to furnish all labor, materials, equipment and everything which may be necessary or incidental thereto, as proposed by said Contract Documents, all to the satisfaction of the General Services-Facility Operations Supervisor or designated representative of the Missouri Department of Transportation and the Missouri Highway and Transportation Commission, for the stipulated sum of:

\_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_)

2. The undersigned, acknowledges having examined and being familiar with the contract documents including the drawings, the Instructions to Bidders, General Conditions, Supplementary Conditions and the body of technical specifications.
3. The undersigned acknowledges receipt of Addenda number \_\_\_\_\_ through \_\_\_\_\_ inclusive.
4. Enclosed with this bid is bid security in the amount of not less than 5% of the bidder's proposed Contract Sum, the amount being \_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_).

**IF AN INDIVIDUAL**

_____		_____
Name of individual		Residence address
_____	_____	_____
Social Security Number	Telephone	Number
_____		
Firm Name, If Any		
_____		
_____	_____	_____
Address for communications	Signature	

**IF A PARTNERSHIP**

_____		(State Name and Residence Address of All Partners)
Name of Partnership	_____	_____
	-	_____
Partner	R	_____
		Residence Address
	-	_____
Partner	R	_____
		Residence Address
_____		_____
		Federal Tax I.D. Number
Address for Communications		_____
		Signature of Either Partner
_____		
Telephone Number		

**IF A CORPORATION**

_____		Incorporated under the laws of the
Name of Corporation		State of _____
_____		Corporate License No. _____
Name and Title of Officer		(If a corporation organized in a state other than
_____		Missouri, attach Certificate of Authority to do
Signature of officer		business in the State of Missouri.)
_____		_____
		Federal Tax I.D. Number
_____		(ATTEST)
Address for Communications		_____
_____		
Telephone Number	(SE	AL) Secretary

(Each bidder must complete the Bid Form by signing in the proper signature line above and by supplying the required information called for in connection with the signature. The information called for is necessary in the proper preparation of the contract and performance bond.)

00430

**SUBCONTRACTOR LISTING**

1. For portions of Work equaling or exceeding 1% of the total proposed Contract Sum, the undersigned proposes to use the following subcontractors. Except as otherwise approved by the Owner, the undersigned proposes to perform all other portions of the Work with his own forces.

2.	Portion of the Work:	Subcontractor name and address:
-	_____	_____ _____ _____
-	_____	_____ _____ _____
-	_____	_____ _____ _____

IF	USE ADDITIONAL SHEETS REQUIRED	BIDDER:
PROV I	SIDE SIGNATURE IDENTICAL TO THAT SHOWN ON THE BID FORM	_____ by _____

00600

**BID BOND**

KNOW ALL MEN BY THESE PRESENTS, that we \_\_\_\_\_,  
as Principal, and \_\_\_\_\_,  
as Surety, are held firmly bound unto the State of Missouri (acting by and through the Missouri Highway and  
Transportation Commission) in the penal sum of

\_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_), to be paid to the State of Missouri, or the Missouri Highway and Transportation  
Commission, to be credited to the State Road Fund and Principal and Surety binding themselves, their heirs,  
executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_

THE CONDITION OF THIS OBLIGATION is such that:  
WHEREAS, the Principal is submitting herewith a bid to the Missouri Highway and Transportation Commission on  
Route(s) \_\_\_\_\_,  
in \_\_\_\_\_ County(ies), Project(s) \_\_\_\_\_,  
for construction or improvement as set out in said proposal.

NOW THEREFORE, if the Missouri Highway and Transportation Commission shall accept the bid of the Principal,  
and if said Principal shall properly execute and deliver to the Missouri Highway and Transportation Commission the  
Contract, Contract Bond, Specifications and evidence of insurance coverage in compliance with the requirements of  
the Proposal, to the satisfaction of the Missouri Highway and Transportation Commission, then this obligation shall  
be void and of no effect, otherwise to remain in full force and effect.

In the event the said Principal shall, in the judgment of the Missouri Highway and Transportation Commission, fail to  
comply with any requirement as set forth in the preceding paragraph, then the Stat of Missouri, acting through the  
Missouri Highway and Transportation Commission, shall immediately and forthwith be entitled to recover the fees,  
and any other expense of recovery.

\_\_\_\_\_  
Principal Surety

By \_\_\_\_\_  
Attorney in Fact (SEAL)

Attest: (CORPORATE SEAL)

\_\_\_\_\_  
Corporate Secretary

Note: This bond must be executed by the Principal and by a Corporate Surety authorized to conduct  
surety business in the State of Missouri.

**END OF SECTION**

01019

CONTRACT REQUIREMENTS

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Schedule of values.
- B. Application for payment.
- C. Change procedures.
- D. Alternatives.

1.2 RELATED SECTIONS

- A. Section 01600 - Material and Equipment: Product substitutions.

1.3 SCHEDULE OF VALUES

- A. Submit a printed schedule on Contractor's standard form. Electronic media printout will be considered.
- B. Submit Schedule of Values in duplicate within 20 days after date of Owner-Contractor Agreement.
- C. Revise schedule to list approved Change Orders, with each Application For Payment.

1.4 APPLICATIONS FOR PAYMENT

- A. Submit four copies of each application on Contractor's electronic media driven form.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: 30 days.
- D. Submit waiver of liens from vendors.
- E. Include an updated construction progress schedule.
- F. Certified payroll records.

1.5 CHANGE PROCEDURES

- A. The Architect/Engineer/Designer may issue a Notice of Change that includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required.
- B. The Contractor may propose changes by submitting a request for change to the Architect/Engineer/Designer describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, the effect on the Contract Sum/Price and Contract Time, and a statement describing the effect on Work by the MoDOT District or other Contractors.
- C. Stipulated Sum/Price Change Order: Based on Notice of Change and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect/Engineer/Designer.
- D. Construction Change Directive: Architect/Engineer/Designer may issue a directive instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute the change.

- E. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Architect/Engineer/Designer will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
- F. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- G. Execution of Change Orders: Architect/Engineer/Designer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.6 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specify requirements.
- B. If, in the opinion of the Architect/Engineer/Designer, it is not practical to remove and replace the Work, the Architect/Engineer/Designer will direct an appropriate remedy or adjust payment.

1.7 ALTER NATIVES

- A. Accepted Alternatives will be identified in Owner-Contractor Agreement.

**END OF SECTION**

**COORDINATION AND MEETING REQUIREMENT**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Field engineering.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Preinstallation meetings.
- G. Equipment electrical characteristics and components.
- H. Examination.
- I. Preparation.
- J. Cutting and Patching.
- K. Alteration project procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to and placing in service, such equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work, which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas, except as otherwise indicated, conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 FIELD ENGINEERING

- A. Employ a Land Surveyor registered in the State of Missouri and acceptable to Architect/Engineer/Designer.
- B. Owner will locate and protect survey control and reference points.
- C. Control datum for survey is that established by Owner provided survey.
- D. Verify setbacks and easements; confirm drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines and levels, utilizing recognized engineering survey practices.

1.4 PRECONSTRUCTION MEETING

- A. Architect/Engineer/Designer will schedule a meeting after Notice of Award.

- B. Attendance Required: District engineer or representative, Architect/Engineer/Designer and Contractor.
- C. Record minutes and distribute copies within 5 days after meeting to participants, with two copies to District Engineer, Architect/Engineer/Designer, participants and those affected by decisions made.

1.5 SITE MOBILIZATION MEETING

- A. Architect/Engineer/Designer will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Architect/Engineer/Designer will record minutes and distributes copies within 5 days after meeting to participants, with two copies to Architect/Engineer/Designer, participants and those affected by decisions made.

1.6 PROGRE SS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at when arranged by Architect/Engineer/Designer.
- B. Architect/Engineer/Designer will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, District engineer representative, Architect/Engineer/Designer, as appropriate to agenda topics for each meeting.
- D. Agenda:
  - 1. Review of Work progress.
  - 2. Field observations, problems, and decisions.
  - 3. Identification of problems, which impede planned progress.
  - 4. Maintenance of progress schedule.
  - 5. Corrective measures to regain projected schedules.
  - 6. Coordination of projected progress.
  - 7. Effect of proposed changes on progress schedule and coordination.
- E. Record minutes and distributes copies within 5 days after meeting to participants and those affected by decisions made.

1.7 PREINST ALLATION MEETING

- A. When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.
- B. Notify Architect/Engineer/Designer seven days in advance of meeting date.
- C. Prepare agenda and preside at meeting:
  - 1. Review conditions of installation, preparation and installation procedures.
  - 2. Review coordination with related work.
- D. Record minutes and distributes copies within 5 days after meeting to participants and those affected by decisions made.

**PART 2 PRODUCTS**

Not used

**PART 3 EXECUTION**

**3.1 CUTTING AND PATCHING**

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements, which affect:
  - 1. Structural integrity of element.
  - 2. Integrity of weather-exposed or moisture-resistant elements.
  - 3. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching to complete Work, and to:
  - 1. Uncover Work to install or correct ill-timed Work.
  - 2. Remove and replace defective and non-conforming Work.
  - 3. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Cut masonry and concrete materials using masonry saw or core drill.
- E. Fit Work tight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- F. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- G. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- H. Identify hazardous substances or conditions exposed during the Work to the Architect/Engineer/Designer for decision or remedy.

**3.2 ALTERATION PROJECT PROCEDURES**

- A. Materials: As specified in Product sections; match existing Products and work for patching and extending work.
- B. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- C. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Architect/Engineer/Designer for review.
- D. Patch or replace portions of existing surfaces that are damaged, lifted, discolored or showing other imperfections.
- E. Finish surfaces as specified in individual Product sections.

**END OF SECTION**

01300

**SUBMITTAL REQUIREMENTS**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed Products list.
- D. Product Data.
- E. Shop Drawings.
- F. Samples.
- G. Design data.
- H. Test reports.
- I. Certificates.
- J. Manufacturer's instructions.
- K. Manufacturer's field reports.
- L. Erection drawings.
- M. Construction photographs.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals
- B. Section 01400 - Quality Control: Manufacturers' field services and reports.
- C. Section 01700 - Contract Closeout: Contract warranties, bonds, manufacturers' certificates and closeout submittals.

1.3 REFERENCES

- A. AGC Associated General Contractors of America publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

1.4 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Architect/Engineer/Designer accepted form.
- B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number and specification section number, as appropriate.
- C. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite the Project, and deliver to Architect/Engineer/Designer at business address. Coordinate submission of related items.
- E. For each submittal for review, allow 15 days excluding delivery time to and from the contractor.
- F. Identify variations from Contract Documents and Product or system limitations, which may be detrimental to successful performance of the completed Work.
- G. Submittals not requested will not be recognized or processed.

## 1.5 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within 15 days after date established in Notice to Proceed.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a horizontal bar chart with separate line for each major portion of Work or operation, identifying first workday of each week.

## 1.6 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards.

## 1.7 PRODUCT DATA

- A. Product Data For Review:
  - 1. Submitted to Architect/Engineer/Designer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
  - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B. Product Data For Information:
  - 1. Submitted for the Architect/Engineer/Designer's knowledge as contract administrator or for the Owner.
- C. Product Data For Project Closeout:
  - 1. Submitted for the Owner's benefit during and after project completion.
- D. Submit the number of copies, which the Contractor requires, plus two copies that will be retained by the Architect/Engineer/Designer.
- E. Mark each copy to identify applicable products, models, options and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- F. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01700 - CONTRACT CLOSEOUT.

## 1.8 SHOP DRAWINGS

- A. Shop Drawings For Review:
  - 1. Submitted to Architect/Engineer/Designer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
  - 2. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B. Shop Drawings For Information:
  - 1. Submitted for the Architect/Engineer/Designer's knowledge as contract administrator or for the Owner.

- C. Shop Drawings For Project Closeout:
  - 1. Submitted for the Owner's benefit during and after project completion.
- D. Indicate special utility and electrical characteristics, utility connection requirements and location of utility outlets for service for functional equipment and appliances.
- E. Submit in the form of one reproducible transparency and one opaque reproduction.

#### 1.9 SAMPLES

- A. Samples For Review:
  - 1. Submitted to Architect/Engineer/Designer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
  - 2. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B. Samples For Information:
  - 1. Submitted for the Architect/Engineer/Designer's knowledge as contract administrator or for the Owner.
- C. Samples For Selection:
  - 1. Submitted to Architect/Engineer/Designer for aesthetic, color, or finish selection.
  - 2. Submit samples of finishes for Architect/Engineer/Designer selection.
  - 3. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.

#### 1.10 DESIGN DATA

- A. Submit for the Architect/Engineer/Designer's knowledge as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

#### 1.11 TEST REPORTS

- A. Submit for the Architect/Engineer/Designer's knowledge as contract administrator or for the Owner.
- B. Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

#### 1.12 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Architect/Engineer/Designer, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product but must be acceptable to Architect/Engineer/Designer.

#### 1.13 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery,

storage, assembly, installation, and start-up, adjusting and finishing, to Architect/Engineer/Designer for delivery to owner in quantities specified for Product Data.

- B. Indicate special procedures, perimeter conditions requiring special attention and special environmental criteria required for application or installation.
- C. Refer to Section 01400 - Quality Control, Manufacturers' Field Services article.

1.14 M ANUFACTURER'S FIELD REPORTS

- A. Submit reports for the Architect/Engineer/Designer's benefit as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.15 ERECTION DRAWINGS

- A. Submit drawings for the Architect/Engineer/Designer's benefit as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by the Architect/Engineer/Designer or Owner.

**END OF SECTION**

01400

QUALITY CONTROL REQUIREMENTS

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Quality assurance - control of installation.
- B. Tolerances
- C. References and standards.
- D. Mock-up.
- E. Inspecting and testing laboratory services.
- F. Manufacturers' field services.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals: Submission of manufacturers' instructions and certificates.
- B. Section 01600 - Material and Equipment: Requirements for material and product quality.
- C. Section 01650 - Starting of Systems.

1.3 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer/Designer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.4 TOLERANCES

- A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer/Designer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.5 REFERENCES AND STANDARDS

- A. For Products or workmanship specified by association, trade or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

- B. Conform to reference standard by date of issue current on date for receiving bids or date specified in the individual specification sections, except where a specific date is established by code.
- C. Neither the contractual relationships, duties or responsibilities of the parties in Contract nor those of the Architect/Engineer/Designer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

#### 1.6 TESTING SERVICES

- A. Contractor to provide all testing services as called out in these specifications.
- B. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the Architect/Engineer/Designer or the Owner.
- C. Testing does not relieve Contractor to perform Work to contract requirements.
- D. Re-testing required because of non-conformance to specified requirements shall be performed by the same MoDOT personnel on instructions by the Architect/Engineer/Designer.

#### 1.7 INSPECTION SERVICES

- A. Owner will employ MoDOT Personnel to perform inspection.
- B. Inspecting may occur on or off the project site. Perform off-site inspecting as required by the Architect/Engineer/Designer or the Owner.
- C. Inspecting does not relieve Contractor to perform Work to contract requirements.

#### 1.8 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and the balancing of equipment as applicable and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Refer to Section 01300 - SUBMITTALS, MANUFACTURERS' FIELD REPORTS article.

### **PART 2 EXECUTION**

#### 2.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

#### 2.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer or conditioner prior to applying any new material or substance in contact or bond.

**END OF SECTION**

01500

**CONSTRUCTION FACILITIES AND TEMPORARY CONTROL REQUIREMENTS**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Temporary Utilities: Electricity, telephone service, facsimile service and sanitary facilities.
- B. Temporary Controls: enclosures and fencing, protection of the Work and water control.
- C. Construction Facilities: progress cleaning and temporary buildings.

1.2 TEMPORARY ELECTRICITY

- A. Cost: By Contractor; pay for temporary power service furnished by MoDOT.

1.3 TELEPHONE SERVICE

- A. Provide, maintain, and pay for telephone service to field office and Architect/Engineer/Designer's field office at time of project mobilization.

1.4 FACSIMILE SERVICE

- A. Provide, maintain and pay for facsimile service and a dedicated telephone line to field office and Architect/Engineer/Designer's field office at time of project mobilization.

1.5 TEMPORARY WATER SERVICE

- A. Connect to existing water source as directed for construction operations at time of project mobilization.
- B. Contractor will reimburse Owner for water used in construction as agreed upon at time of project mobilization.

1.6 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

1.7 FENCING

- A. Construction: Use plastic mesh safety fencing or better.
- B. Provide 48" high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.8 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.9 EXTERIOR ENCLOSURES

- A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

#### 1.10 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

#### 1.11 SECURITY

- A. Provide security and facilities to protect Work and existing facilities and Owner's operations from unauthorized entry, vandalism or theft.
- B. Coordinate with Owner's security program.

#### 1.12 ACCESS ROADS

- A. Provide and maintain access to fire hydrants, free of obstructions.
- B. Provide means of removing mud from vehicle wheels before entering streets.
- C. Designated existing on-site roads may be used for construction traffic.

#### 1.13 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris and rubbish from site periodically and dispose off-site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

#### 1.14 FIELD OFFICES AND SHEDS

- A. Office: Weather tight, with lighting, electrical outlets, heating and ventilating equipment and equipped with drawing rack and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

#### 1.15 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities and materials prior to Final Application for Payment inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

**PART 2      PRODUCTS**

Not Used.

**PART 3      EXECUTION**

Not Used.

**END OF SECTION**

**01600**

**MATERIAL AND EQUIPMENT REQUIREMENT**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

1.2 RELATED SECTIONS

- A. Instructions to Bidders: Product options and substitution procedures.
- B. Section 01400 - Quality Control: Product quality monitoring.

1.3 PRODUCTS

- A. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B. Provide interchangeable components of the same manufacture for components being replaced.

1.4 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct and products are undamaged.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement or damage.

1.5 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive Products in weather tight, climate controlled, enclosures in an environment favorable to Product.
- D. For exterior storage of fabricated Products, place on sloped supports above ground.
- E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement or damage.

- I. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.6 PROD UCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description is acceptable.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.7 S UBSTITUTIONS

- A. Architect/Engineer/Designer will consider requests for Substitutions only within 15 days after date established in Notice to Proceed.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor:
  - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
  - 2. Will provide the same warranty for the Substitution as for the specified Product.
  - 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
  - 5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
  - 1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
  - 2. Submit shop drawings, product data and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
  - 3. The Architect/Engineer/Designer will notify Contractor in writing of decision to accept or reject request.

**PART 2 PRODUCTS**

Not Used.

**PART 3 EXECUTION**

Not Used.

**END OF SECTION**

01650

**STARTING OF SYSTEMS REQUIREMENT**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting and balancing.

1.2 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturers field reports.
- B. Section 01700 - Contract Closeout: System operation and maintenance data and extra materials.

1.3 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect/Engineer/Designer seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, and control sequence and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative or Contractors' personnel in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01300 that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Final Completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance and shutdown of each item of equipment at agreed time, at equipment location.

- E. Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instruction.
- F. The amount of time required for instruction on each item of equipment and system that's specified in individual sections.

**PART 2 PRODUCTS**

Not Used.

**PART 3 EXECUTION**

Not Used.

**END OF SECTION**

**CONTRACT CLOSEOUT REQUIREMENT**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Adjusting.
- D. Project record documents.
- E. Operation and maintenance data.
- F. Spare parts and maintenance Products.
- G. Warranties.

1.2 RELATED SECTIONS

- A. Section 01500 - Construction Facilities and Temporary Controls: Progress cleaning.
- B. Section 01650 - Starting of Systems: System start-up, testing, adjusting and balancing.

1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer/Designer's review.
- B. Provide submittals to Owner that is required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.
- D. Owner will occupy portions of the building as specified in Section 01010.

1.4 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- B. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- C. Clean or replace filters of operating equipment used during construction and/or adjustment.
- D. Clean debris from roofs, gutters, downspouts and drainage systems.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste and surplus materials, rubbish and construction facilities from the site.

1.5 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.6 PROJECT RECORD DOCUMENTS

- A. Store record documents separate from documents used for construction.

- B. Record information concurrent with construction progress.
- C. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and modifications.
- D. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
  - 1. Measured depths of foundations in relation to finish main floor datum.
  - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  - 4. Field changes of dimension and detail.
  - 5. Details not on original Contract drawings.
- E. Submit documents to Architect/Engineer/Designer's with claim for final Application for Payment.

#### 1.7 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project and subject matter of binder when multiple binders are required.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Submit 1 draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned with Architect/Engineer/Designer comments. Revise content of all document sets as required prior to final submission.
- E. Submit two sets of revised final volumes, within 10 days after final inspection.

#### 1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra Products in quantities specified individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

#### 1.9 WARRANTIES

- A. Execute and assemble transferable warranty documents from Subcontractors, suppliers and manufacturers.
- B. Submit prior to final Application for Payment.
- C. For items of Work delayed beyond date of Final Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of the warranty period.

**PART 2      PRODUCTS**

Not Used.

**PART 3      EXECUTION**

Not Used.

**END OF SECTION**



Jeremiah W. (Jay) Nixon, Governor \* Kip A. Stetzler, Acting Director

## DEPARTMENT OF NATURAL RESOURCES

dnr.mo.gov

SEP 23 2010

Ms. Becky Baltz  
Missouri Department of Transportation  
3901 East 32<sup>nd</sup> Street  
Joplin, MO 64804

Dear Ms. Baltz

Enclosed please find construction permit number CPSE00137 for MoDOT sewer extension in El Dorado Springs, Cedar County, Missouri. This permit authorizes the construction of the facilities described in the application and the permit and is issued in accordance with the regulations of the Missouri Clean Water Commission. Revised engineering plans and/or specifications must be submitted to and approved by the Department of Natural Resources (Department) **prior** to making any changes for the work described in the permit. This permit will expire one year from the date of issuance unless justification for extension is presented thirty (30) days prior to expiration.

The enclosed loading sheet indicates the facility has adequate capacity to serve the proposed sewer extension. As the facility approaches the 80% capacity level the City should begin its planning for the expansion of the wastewater treatment facility. The Department of Natural Resources administers the State Revolving Fund which can assist the City in funding the needed upgrades to the system.

More information about the State Revolving Fund may be found in the following links:  
<http://www.dnr.mo.gov/env/wpp/srf/cwsrf-compar.pdf>  
<http://www.dnr.mo.gov/env/wpp/srf/cwsrf-info.htm>

The Department reviewed the application for compliance with Missouri Clean Water Commission (MCWC) Regulations 10 CSR 20-chapters 6, 7, and 8 and the impact of the extension on the treatment capacity of the receiving wastewater treatment facility. It is the responsibility of your consulting engineer to ensure that the design and construction conforms with all required engineering standards, state and local regulations. Department staff may conduct random, on-site inspections of some construction projects to further ensure conformity with the requirements.

The enclosed permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas. The enclosed permit is invalid for projects required to comply with the requirements contained in 10 CSR 20-Chapter 4, "Grants".

The enclosed permit meets the requirements for a construction permit issued by the Department but does not supersede any authorization required from other state regulatory authorities including the Missouri Public Service Commission or local regulatory authorities including building, planning and zoning, home owners associations, condominium owners associations etc. It is the responsibility of the applicant to ensure compliance with other state and county government agencies, city government agencies and local regulations.



In addition to the requirements for a construction permit, land disturbance activities of one (1) or more acres requires a Missouri State Operating Permit to discharge stormwater (10 CSR 20-6.200). This permit requires best management practices sufficient to control runoff and sedimentation in order to protect waters of the state. For more information or to obtain the proper forms, please contact the Department of Natural Resources, Southwest Regional Office by calling 417-891-4300.

**Verification of compliance with 10 CSR 20-8.120, Design of Sewers; Sections (6)(G)5, Deflection Test; (6)(H)2, Leakage Test, when required by rule (required on all pressure sewers); and (11) Protection of Water Supplies will be required before authorization will be granted to place the facilities to be constructed under this construction permit into service. See the enclosed permit conditions.**

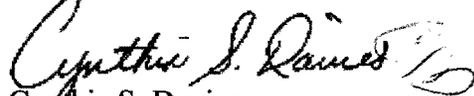
Missouri Clean Water Commission Regulations 10 CSR 20-6.010(5)(D) and 10 CSR 20-6.010(6)(B) require that the engineer certify that the construction has been completed in accordance with the approved plans and specifications and requires that the owner or continuing authority apply for a Letter of Authorization. The enclosed Application for Letter of Authorization shall be completed by both the engineer and the owner / continuing authority and returned to the Southwest Regional Office. A copy of the consulting engineer's field notes must accompany the application.

If you were adversely affected by this decision, you may be entitled to an appeal before the administrative hearing commission pursuant to 10 CSR 20-1.020 and Section 621.250, RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission. Any appeal shall be directed to: Administrative Hearing Commission, Truman Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, MO 65102, Phone: 573-751-2422, Fax: 573-751-5018, website: [www.oha.mo.gov/ahc](http://www.oha.mo.gov/ahc).

If you have questions please contact Mr. Jadranko Sarar by calling 417-891-4300 or via mail at Southwest Regional Office, 2040 W. Woodland, Springfield, MO 65807-5912.

Sincerely,

SOUTHWEST REGIONAL OFFICE



Cynthia S. Davies  
Regional Director

CSD/jsk

Enclosures

c: City of El Dorado Springs  
Mr. Nathan W. Meyer, P.E, Olsson Associates

**STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES**

MISSOURI CLEAN WATER COMMISSION



# CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

Ms. Becky Baltz  
3901 East 32<sup>nd</sup> Street  
Joplin, MO 64804

for the construction of (described facilities):

(SEE ATTACHED FACILITY DESCRIPTION)

Permit Conditions:

(SEE ATTACHED PERMIT CONDITIONS)

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources.

As the Department of Natural Resources does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

September 23, 2010  
Effective Date

September 22, 2011  
Expiration Date

Mark N. Templeton, Director, Missouri Department of Natural Resources

Cynthia S. Davies, Regional Director, Southwest Regional Office

**FACILITY DESCRIPTION:**

Wastewater collection systems to include:

Gravity sewer main collection systems including approximately 875 linear feet of eight-inch (8") nominal diameter SDR-26 PVC gravity sewer line; five (5) standard manholes; two (2) cleanouts in proposed 350 lineal feet of four-inch sanitary service line; applicable settlement water/sewer crossings complete with a minimum vertical separation of eighteen-inches (18") between the outside of the water main and the outside of the sewer; constructed to be sufficiently watertight to meet regulatory infiltration and exfiltration rates less than or equal to 200 gallons per inch of pipe diameter per mile of pipe length per day; installation in accordance with the ASTM installation standard including bedding requirements that correspond to the pipe material of construction; and including all necessary appurtenances to make a complete and usable gravity sewer line collection system.

These wastewater collection systems will serve one vehicle wash down pad (with oil separation) and the existing maintenance facility on MODOT property, located on US Highway 54 and East Airport Road, City of El Dorado Springs, SE ¼, NE ¼, Section 17, T36N, R28W, Cedar County, Missouri. The average daily flow to be contributed by this extension is estimated to be 1275 gallons per day (gpd) with a peak flow of 3.5 gallons per minute (gpm) containing an estimated 0.25 pounds per day of Five-Day Biochemical Oxygen Demand LB BOD<sub>5</sub> / day. The wastewater will be received by the El Dorado Springs Wastewater Treatment Facility.

APPLICATION FOR LETTER OF AUTHORIZATION  
(SEWER EXTENSION)

DEPARTMENT OF NATURAL RESOURCES  
SOUTHWEST REGIONAL OFFICE  
2040 WEST WOODLAND  
SPRINGFIELD, MO 65807-5912

1. NAME OF PROJECT: \_\_\_\_\_
2. LOCATION OR PROJECT: \_\_\_\_\_
3. CONSTRUCTED UNDER CONSTRUCTION PERMIT NO.: \_\_\_\_\_
4. OWNER: Name \_\_\_\_\_ Phone \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_
5. OPERATING AUTHORITY  
Name \_\_\_\_\_ Phone \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_
6. BRIEF DESCRIPTION \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. CERTIFICATION: I, the project engineer on the above described facilities, hereby certify that I have inspected these facilities and find them to be constructed essentially in accordance with the approved plans and specifications, and recommend their acceptance and approval by the Missouri Clean Water Commission.

\_\_\_\_\_  
Signature, Project Engineer

\_\_\_\_\_  
Date

I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief, such information is true, complete and accurate, and if granted this Letter of Authorization, I agree to abide by all rules, regulations, orders and decisions of the Missouri Clean Water Commission.

\_\_\_\_\_  
Signature, Applicant (Owner or legally  
authorized representative)

\_\_\_\_\_  
Date

**Note: A filing fee is NOT required for this Letter of Authorization**



## SPECIFICATIONS

Olsson Associates

Engineered Project, Technical Specifications

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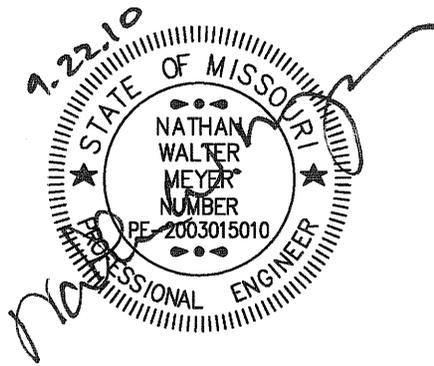
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**This contract shall be constructed in accordance with the “Missouri Standard Specifications for Highway Construction, 2004 Edition” as well as the latest revision of the “General Provisions and Supplemental Specifications to 2004 Missouri Standard Specifications for Highway Construction,” except as amended herein.**

SECTION 000105  
CERTIFICATIONS PAGE

I hereby certify that specifications sections 02200, 02623, 02705, 02725 were prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the laws of the State of Missouri.



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**Nathan W. Meyer, P.E.**

**License No. PE-2003015010**

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DIVISION 2 – SITE CONSTRUCTION

SECTION 02200

EARTHWORK

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## **PART 1 GENERAL**

Refer to project drawings for the following information:

- Surface elevations, existing and new;
- Location of underground obstructions and existing utilities;
- Clearing stripping and grubbing limits, if different from clearing limits;
- Areas to be seeded;
- Pipe trench excavation details.
- Details of special construction such as under railroad and highways right-of-way requirements for jacking and boring;

### **1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

#### **AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)**

AASHTO T 180 (2009)	Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and an 457-mm (18-in) Drop
AASHTO T 224 (2001; R 2004)	Correction for Coarse Particles in the Soil Compaction Test

#### **ASTM INTERNATIONAL (ASTM)**

ASTM C 136 (2006)	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 33/C 33M (2008)	Standard Specification for Concrete Aggregates
ASTM D 1140 (2000; R 2006)	Amount of Material in Soils Finer than the No. 200 Sieve
ASTM D 1556 (2007)	Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557 (2009)	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft <sup>3</sup> ).
ASTM D 1883 (2007e1e2)	CBR (California Bearing Ratio) of Laboratory-Compacted Soils
ASTM D 2167 (2008)	Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2434 (1968; R 2006)	Permeability of Granular Soils (Constant Head)

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ASTM D 2487 (2006e1)	Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2937 (2004)	Density of Soil in Place by the Drive-Cylinder Method
ASTM D 422 (1963; R 2007)	Particle-Size Analysis of Soils
ASTM D 4318 (2005)	Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 6938 (2007a)	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D 698 (2007e1)	Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft).

## 1.2 DEFINITIONS

- A. Satisfactory Materials. Satisfactory materials comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP. Satisfactory materials for grading comprise stones less than 8 inches, except for fill material for pavements and railroads which comprise stones less than 3 inches in any dimension.
- B. Unsatisfactory Materials. Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; and material classified as satisfactory which contains root and other organic matter or frozen material. Notify the Owner's Representative when encountering any contaminated materials.
- C. Cohesionless and Cohesive Materials. Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Perform testing, required for classifying materials, in accordance with ASTM D 4318, ASTM C 136, ASTM D 422, and ASTM D 1140.
- D. Degree of Compaction. Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated as a percent of laboratory maximum density.
- E. Topsoil. Material suitable for topsoils obtained from excavations is defined as: Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth.
- F. Hard/Unyielding Materials. Hard/Unyielding materials comprise weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" with stones greater than 3 inches in any dimension or as defined by the pipe

manufacturer, whichever is smaller. These materials usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

- G. Rock. Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding ½ cubic yard in volume. Removal of hard material will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production.
- H. Unstable material. Unstable materials are too wet to properly support the utility pipe, conduit, or appurtenant structure.
- I. Select Granular Material. Select granular material consists of materials classified as GW, GP, SW, or SP, by ASTM D 2487 where indicated. The liquid limit of such material must not exceed 35 percent when tested in accordance with ASTM D 4318. The plasticity index must not be greater than 12 percent when tested in accordance with ASTM D 4318, and not more than 35 percent by weight may be finer than No. 200 sieve when tested in accordance with ASTM D 1140.
- J. Initial Backfill Material. Initial backfill consists of select granular material or satisfactory materials free from rocks 3 inches or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. When the pipe is coated or wrapped for corrosion protection, free the initial backfill material of stones larger than 3 inches in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

### 1.3 SUBMITTALS

Submit testing laboratory qualifications prior to start of work.

## **PART 2 PRODUCTS**

### 2.1 BURIED WARNING AND IDENTIFICATION TAPE

Provide metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls 3 inches minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Provide permanent color and printing, unaffected by moisture or soil.

#### Warning Tape Color Codes

Red:	Electric
Yellow:	Gas, Oil; Dangerous Materials
Orange:	Telephone and Other Communications

Blue: Water Systems  
Green: Sewer Systems  
White: Steam Systems  
Gray: Compressed Air

- A. Warning Tape for Metallic Piping. Provide acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above, with a minimum thickness of 0.003 inch and a minimum strength of 1500 psi lengthwise, and 1250 psi crosswise, with a maximum 350 percent elongation.
- B. Detectable Warning Tape for Non-Metallic Piping. Provide polyethylene plastic tape conforming to the width, color, and printing requirements specified above, with a minimum thickness of 0.004 inch, and a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Manufacture tape with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

## 2.2 DETECTION WIRE FOR NON-METALLIC PIPING

Tracer Wire: Tracer wire shall be 12 ga. THHN (plastic-coated) copper wire. Tracer wire shall terminate at manholes and lift stations in the manner shown on the drawings. A minimum of 24" of tracer wire shall be coiled inside the capped riser pipe. Provide tracer wire on all non-metallic pipe.

## PART 3 EXECUTION

### 3.1 STRIPPING OF TOPSOIL

Where indicated or directed, strip topsoil to a depth of 4 inches. Spread topsoil on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient to areas that are to receive application of the topsoil later, or at locations indicated or specified. Keep topsoil separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 2 inches in diameter, and other materials that would interfere with planting and maintenance operations. Remove from the site any surplus of topsoil from excavations and gradings. Do not excavate wet topsoil. Stockpile in area designated onsite to depth not exceeding 8 feet and protect from erosion. Topsoil shall be redistributed after final grading.

### 3.2 GENERAL EXCAVATION

Perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Perform the grading in accordance with the typical sections shown and the tolerances specified in paragraph FINISHING. Transport satisfactory excavated materials and place in fill or embankment within the limits of the work. Excavate unsatisfactory materials encountered within the limits of the work below grade and replace with satisfactory materials as directed. Include such excavated material and the satisfactory material ordered as replacement in excavation. Dispose surplus satisfactory excavated material not required for fill or embankment in areas approved for surplus material

storage or designated waste areas. Dispose unsatisfactory excavated material in designated waste or spoil areas. During construction, perform excavation and fill in a manner and sequence that will provide proper drainage at all times. Excavate material required for fill or embankment in excess of that produced by excavation within the grading limits from the borrow areas indicated or from other approved areas selected by the Owner as specified.

- A. Ditches. Finish excavation of ditches by cutting accurately to the cross sections, grades, and elevations shown on project drawings. Do not excavate ditches below grades shown. Backfill the excessive open ditch excavation with satisfactory, thoroughly compacted, material or with suitable stone or cobble to grades shown. Dispose excavated material as shown or as directed, except in no case allow material be deposited a maximum of 4 feet from edge of a ditch. Maintain excavations free from detrimental quantities of leaves, brush, sticks, trash, and other debris until final acceptance of the work
- B. Drainage. Provide for the collection and disposal of surface and subsurface water encountered during construction. Completely drain construction site during periods of construction to keep soil materials sufficiently dry. Construct storm drainage features (ponds/basins) at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein. It is the responsibility of the Contractor to assess the soil and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed.
- C. Dewatering. Control groundwater flowing toward or into excavations to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. Do not permit French drains, sumps, ditches or trenches within 3 feet of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Take control measures by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. While the excavation is open, maintain the water level continuously, at least 2 feet below the working level. Relieve hydrostatic head in previous zones below subgrade elevation in layered soils to prevent uplift.
- D. Trench Excavation Requirements. Excavate the trench as recommended by the manufacturer of the pipe to be installed. Slope trench walls below the top of the pipe, or make vertical, and of such width as recommended in the manufacturer's printed installation manual. Provide vertical trench walls where no manufacturer's printed installation manual is available. Shore trench walls more than 20 feet high, cut back to a stable slope, or provide with equivalent means of protection for employees who may be exposed to moving ground or cave in. Excavate trench walls which are cut back to at least the angle of repose of the soil. Give special attention to slopes which may be adversely affected by weather or moisture content. Where recommended trench widths are exceeded, provide redesign, stronger pipe, or special installation procedures by the Contractor. The Contractor is

responsible for the cost of redesign, stronger pipe, or special installation procedures without any additional cost to the Owner.

1. Minimum permissible sidewall clearance between installed pipe and each trench wall, expressed in inches, shall be as follows:

<u>Pipe Size</u>	<u>Minimum Sidewall Clearance</u>
30 11	
27 10	
24 9	
20 8	
18 8	
15 8	
12 6	
10 6	
8 5	
6 4	
4 and smaller	4

The stipulated minimum sidewall clearances are not minimum average clearances, but are minimum clear distances which will be required.

2. Maximum trench widths below an elevation 6 inches above the top of installed pipe, shall be pipe diameter plus 24 inches.
3. Bottom Preparation. Grade the bottoms of trenches accurately to provide uniform bearing and support for the bottom quadrant of each section of the pipe. Excavate bell holes to the necessary size at each joint or coupling to eliminate point bearing. Remove stones as recommended by the pipe manufacturer to avoid point bearing.
4. Removal of Unyielding Material. Where unyielding material is encountered in the bottom of the trench, remove such material 3 inches below the required grade and replaced with suitable materials as provided in paragraph BACKFILLING AND COMPACTION.
5. Removal of Unstable Material. Where unstable material is encountered in the bottom of the trench, remove such material to the depth directed and replace it to the proper grade with select granular material as provided in paragraph BACKFILLING AND COMPACTION. When removal of unstable material is required due to the Contractor's fault or neglect in performing the work, the Contractor is responsible for excavating the resulting material and replacing it without additional cost to the Owner.

6. Excavation for Appurtenances. Provide excavation for manholes, catch-basins, inlets, or similar structures of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Clean rock or loose debris and cut to a firm surface either level, stepped, or serrated, as shown or as directed. Remove loose disintegrated rock and thin strata. Specify removal of unstable material. When concrete or masonry is to be placed in an excavated area, take special care not to disturb the bottom of the excavation. Do not excavate to the final grade level until just before the concrete is to be placed.
  7. Jacking, Boring, and Tunneling. In situations where utility lines must be installed more than 15 to 20 feet below ground surface, through embankments, under minor roads or parking areas, or where surface conditions make it difficult or impractical to excavate open trenches, utility lines may be installed by jacking, boring, or tunneling as a Contractor option. Refer to project drawings to identify and validate utility crossings where jacking, boring, or tunneling is required.
- E. Underground Utilities. The Contractor is responsible for movement of construction machinery and equipment over pipes and utilities during construction. Perform work as indicated in accordance with procedures outlined by utility company. For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Owner's Representative. Report damage to utility lines or subsurface construction immediately to the Owner's Representative.
- F. Structural Excavation. Ensure that footing subgrades have been inspected and approved by the Owner's Representative prior to concrete placement.

### 3.3 OPENING AND DRAINAGE OF EXCAVATION

Notify the Owner's Representative sufficiently in advance of the opening of any excavation to permit elevations and measurements of the undisturbed ground surface to be taken. Except as otherwise permitted, excavate to provide adequate drainage. Transport overburden and other spoil material to designated spoil areas or otherwise dispose of as directed. Provide neatly trimmed and drained borrow pits after the excavation is completed. Ensure that excavation of any area, operation of borrow pits, or dumping of spoil material results in minimum detrimental effects on natural environmental conditions.

### 3.4 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Do not excavate to final grade until just before concrete is to be placed. Roughen the level surfaces, and cut the sloped surfaces, as indicated, into rough steps or benches to provide a satisfactory bond.

### 3.5 GROUND SURFACE PREPARATION

- A. General Requirements. Remove and replace unsatisfactory material with satisfactory materials, as directed by the Owner's Representative, in surfaces to receive fill or in excavated areas. Scarify the surface to a depth of 6 inches before the fill is started. Plow, step, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that the fill material will bond with the existing material. When subgrades are less than the specified density, break up the ground surface to a minimum depth of 6 inches, pulverizing, and compacting to the specified density. When the subgrade is part fill and part excavation or natural ground, scarify the excavated or natural ground portion to a depth of 12 inches and compact it as specified for the adjacent fill.
- B. Frozen Material. Do not place material on surfaces that are muddy, frozen, or contain frost. Finish compaction by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Moisten material as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used.

### 3.6 UTILIZATION OF EXCAVATED MATERIALS

Dispose unsatisfactory materials removing from excavations into designated waste disposal or spoil areas. Use satisfactory material removed from excavations, insofar as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes. Do not waste any satisfactory excavated material without specific written authorization. Dispose of satisfactory material, authorized to be wasted, in designated areas approved for surplus material storage or designated waste areas as directed. Clear and grub newly designated waste areas on Owner-controlled land before disposal of waste material thereon. Stockpile and use coarse rock from excavations for constructing slopes or embankments adjacent to streams, or sides and bottoms of channels and for protecting against erosion. Do not dispose excavated material to obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way.

### 3.7 BURIED TAPE AND DETECTION WIRE

- A. Buried Warning and Identification Tape. Provide buried utility lines with utility identification tape. Bury tape 12 inches below finished grade; under pavements and slabs, bury tape 6 inches below top of subgrade.
- B. Buried Detection Wire. Bury detection wire directly above non-metallic piping at a distance not to exceed 12 inches above the top of pipe. Extend the wire continuously and unbroken, from manhole to manhole. Terminate the ends of the wire inside the manholes at each end of the pipe, with a minimum of 3 feet of wire, coiled, remaining accessible in each manhole. Furnish insulated wire over its entire length. Install wires at manholes between the top of the corbel and the frame, and extend up through the chimney seal between the frame and the chimney seal. For force mains, terminate the wire in the valve pit at the pump station end of the pipe.

### 3.8 BACKFILLING AND COMPACTION

Place backfill adjacent to any and all types of structures, and compact to at least 90 percent laboratory maximum density for cohesive materials or 95 percent laboratory maximum density for cohesionless materials, to prevent wedging action or eccentric loading upon or against the structure. Prepare ground surface on which backfill is to be placed as specified in paragraph GROUND SURFACE PREPARATION. Provide compaction requirements for backfill materials in conformance with the applicable portions of paragraphs GROUND SURFACE PREPARATION. Finish compaction by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

A. Trench Backfill. Backfill trenches to the grade shown. Backfill the trench to the minimum cover requirements above the top of pipe prior to performing the required pressure tests. Leave the joints and couplings uncovered during the pressure test. Do not backfill the trench until all specified tests are performed.

1. Replacement of Unyielding material. Replace unyielding material removed from the bottom of the trench with select granular material or initial backfill material.
2. Replacement of Unstable Material. Replace unstable material removed from the bottom of the trench or excavation with select granular material placed in layers not exceeding 6 inches loose thickness.
3. Bedding and Initial Backfill. Provide bedding of the type and thickness shown. Place initial backfill material and compact it with approved tampers to a height of at least one foot above the utility pipe. Bring up the backfill evenly on both sides of the pipe for the full length of the pipe. Take care to ensure thorough compaction of the fill under the haunches of the pipe. Except as specified otherwise in the individual piping section, provide bedding for buried piping in accordance with AWWA C600, Type 4, except as specified herein. Compact backfill to top of pipe to 95 percent of ASTM D 698 maximum density. Provide plastic piping with bedding to spring line of pipe.

a. Provide materials as follows:

- (1) Coarse Aggregate No. 1 of the State of Missouri Standard Specifications for Highway Construction.
- (2) Gravel or crushed stone which shall not have a loss of more than 15% after five cycles when tested for soundness with sodium sulfate as described in AASHTO T104.

b. Gradation

Percent Passing	Sieve Size
100	3/4-inch
60-100	1/2-inch
0-5	No. 4

4. Final Backfill. Fill the remainder of the trench, except for special materials for roadways with satisfactory material. Place backfill material and compact as follows:
  - a. Roadways: Place backfill up to the required elevation as specified. Do not permit water flooding or jetting methods of compaction.
  - b. Sidewalks, Turfed or Seeded Areas and Miscellaneous Areas: Deposit backfill in layers of a maximum of 12 inches loose thickness, and compact it to 85 percent maximum density for cohesive soils and 90 percent maximum density for cohesionless soils. Apply this requirement to all other areas not specifically designated above.
- B. Backfill for Appurtenances. After the manhole has been constructed and the concrete has been allowed to cure for 3 days, place backfill in such a manner that the structure is not be damaged by the shock of falling earth. Deposit the backfill material, compact it as specified for final backfill, and bring up the backfill evenly on all sides of the structure to prevent eccentric loading and excessive stress.

### 3.9 SPECIAL REQUIREMENTS

Clean inside of the pipeline casing of dirt, weld splatters, and other foreign matter which would interfere with insertion of the piped utilities by attaching a pipe cleaning plug to the boring rig and passing it through the pipe.

### 3.10 SUBGRADE PREPARATION

- A. Proof Rolling. Finish proof rolling on an exposed subgrade free of surface water (wet conditions resulting from rainfall) which would promote degradation of an otherwise acceptable subgrade. After stripping, proof roll the existing subgrade of roadways, access roads, or shoulders with six passes of a dump truck loaded with 6 cubic meters 4 cubic yards of soil or a 15 ton, pneumatic-tired roller. Operate the roller or truck in a systematic manner to ensure the number of passes over all areas, and at speeds between 2-1/2 to 3-1/2 mph. Undercut rutting or pumping of material to a depth of 6 inches and replace with select material.
- B. Construction. Shape subgrade to line, grade, and cross section, and compact as specified. Include plowing, disking, and any moistening or aerating required to obtain specified compaction for this operation. Remove soft or otherwise unsatisfactory material and replace with satisfactory excavated material or other approved material as directed. Excavate rock encountered in the cut section to a depth of 6 inches below finished grade for the subgrade. Bring up low areas resulting from removal of unsatisfactory material or excavation of rock to required grade with satisfactory materials, and shape the entire subgrade to line, grade, and cross section and compact as specified. After rolling, do not show deviations for the surface of the subgrade for roadways greater than 1/2 inch when tested with a 12-foot straightedge applied both parallel and at right angles to the centerline of the area. Do not

vary the elevation of the finish subgrade more than 0.05 foot from the established grade and cross section.

- C. Compaction. Finish compaction by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Except for paved areas and railroads, compact each layer of the embankment to at least 90 percent of laboratory maximum density.
1. Subgrade for Pavements. Compact subgrade for pavements to at least 95 percentage laboratory maximum density for the depth below the surface of the pavement shown. When more than one soil classification is present in the subgrade, thoroughly blend, reshape, and compact the top 6 inches of subgrade.
  2. Subgrade for Shoulders. Compact subgrade for shoulders to at least 90 percentage laboratory maximum density for the full depth of the shoulder.

### 3.11 SHOULDER CONSTRUCTION

Construct shoulders of satisfactory excavated or borrow material or as otherwise shown or specified. Construct shoulders immediately after adjacent paving is complete. Compact the entire shoulder area to at least the percentage of maximum density as specified in paragraph SUBGRADE PREPARATION above, for specific ranges of depth below the surface of the shoulder. Finish compaction by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Finish shoulder construction in proper sequence in such a manner that adjacent ditches will be drained effectively and that no damage of any kind is done to the adjacent completed pavement. Align the completed shoulders true to grade and shaped to drain in conformity with the cross section shown.

### 3.12 FINISHING

Finish the surface of excavations, embankments, and subgrades to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. Provide the degree of finish for graded areas within 0.1 foot of the grades and elevations indicated except that the degree of finish for subgrades specified in paragraph SUBGRADE PREPARATION. Finish gutters and ditches in a manner that will result in effective drainage. Finish the surface of areas to be turfed from settlement or washing to a smoothness suitable for the application of turfing materials. Repair graded, topsoiled, or backfilled areas prior to acceptance of the work, and re-established grades to the required elevations and slopes.

- A. Subgrade. During construction, keep excavations shaped and drained. Maintain ditches and drains along subgrade to drain effectively at all times. Do not disturb the finished subgrade by traffic or other operation. Protect and maintain the finished subgrade in a satisfactory condition until ballast, subbase, base, or pavement is placed. Do not permit the storage or stockpiling of materials on the finished subgrade. Do not lay subbase, base course, ballast, or pavement until the subgrade has been checked and approved, and in no case place subbase, base, surfacing, pavement, or ballast on a muddy, spongy, or frozen subgrade.

- B. Capillary Water Barrier. Place a capillary water barrier under concrete floor and area-way slabs grade directly on the subgrade and compact with a minimum of two passes of a hand-operated plate-type vibratory compactor.
- C. Grading Around Structures. Construct areas within 5 feet outside of each building and structure line true-to-grade, shape to drain, and maintain free of trash and debris until final inspection has been completed and the work has been accepted.

3.13 PLACING TOPSOIL

On areas to receive topsoil, prepare the compacted subgrade soil to a 2 inches depth for bonding of topsoil with subsoil. Spread topsoil evenly to a thickness of 4 to 6 inches grade to the elevations and slopes shown. Do not spread topsoil when frozen or excessively wet or dry. Obtain material required for topsoil in excess of that produced by excavation within the grading limits from offsite areas.

3.14 TESTING

Perform testing by a certified commercial testing laboratory. Determine field in-place density in accordance with ASTM D 6938. When test results indicate, as determined by the Owner’s Representative that compaction is not as specified, remove the material, replace and recompact to meet specification requirements. Perform tests on recompacted areas to determine conformance with specification requirements. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.

- A. Fill and Backfill Material Gradation. One test per 500 cubic yards stockpiled or in-place source material. Determine gradation of fill and backfill material in accordance with ASTM D 422.
- B. In-Place Densities. Density test frequency can vary from one test per 100 square feet for small areas up to one test per 10,000 square feet. The following table will also help establish test frequency for various situations:

<u>Material Type</u>	<u>Location</u>	<u>of Material</u>	<u>Test</u>	<u>Frequency</u>
Undisturbed native soil		Structures		Two random tests in building footings and two tests on subgrade within building line.
Fills and backfills		Structures (adjacent to)		One test per structure per 2,000 sq. ft taken 12 inches below finished grade.
Subgrades Site		(except airfields)		One test per lift per 2,500 sq. ft
Embankments or borrow		Any		One test per lift per 500 cubic yds placed.
Native soil subgrade other		Any		One test or one test per 10,000

than structures and parking sq. ft, whichever is greater.

Borrow Any One test per lift per 500 cubic yds placed.

- C. Moisture Contents. In the stockpile, excavation, or borrow areas, perform a minimum of two tests per day per type of material or source of material being placed during stable weather conditions. During unstable weather, perform tests as dictated by local conditions and approved by the Owner’s Representative.
- D. Optimum Moisture and Laboratory Maximum Density. Perform tests for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 500 cubic yards of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density.
- E. Tolerance Tests for Subgrades. Perform continuous checks on the degree of finish specified in paragraph SUBGRADE PREPARATION during construction of the subgrades.
- F. Displacement of Sewers. After other required tests have been performed and the trench backfill compacted to a minimum of 2 feet above the top of the pipe, inspect the pipe to determine whether significant displacement has occurred. Conduct this inspection in the presence of the Owner’s Representative. Inspect pipe sizes larger than 36 inches, while inspecting smaller diameter pipe by shining a light or laser between manholes or manhole locations, or by the use of television cameras passed through the pipe. If, in the judgment of the Owner’s Representative, the interior of the pipe shows poor alignment or any other defects that would cause improper functioning of the system, replace or repair the defects as directed at no additional cost to the Owner.

3.15 DISPOSITION OF SURPLUS MATERIAL

Remove surplus material or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber from Owner’s property.

--END OF SECTION--

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DIVISION 2 – SITE CONSTRUCTION

SECTION 02623

GRAVITY SANITARY SEWER MAIN AND SERVICE LINES

- PART 1 GENERAL
  - 1.1 WORK INCLUDED
  - 1.2 REFERENCES
  - 1.3 SUBMITTALS
  - 1.4 DELIVERY, STORAGE, AND HANDLING
- PART 2 PRODUCTS
  - 2.1 GRAVITY SEWER MAIN
  - 2.2 CONNECTIONS TO MANHOLES
- PART 3 EXECUTION
  - 3.1 HANDLING AND STORAGE
  - 3.2 CUTTING PIPE
  - 3.3 CLEANING
  - 3.4 INSPECTION
  - 3.5 ALIGNMENT
  - 3.6 LAYING PIPE
  - 3.7 VIDEO INSPECTION
  - 3.8 DEFLECTION TESTING OF PIPE
  - 3.9 WATER MAIN CONFLICT
  - 3.10 LOW PRESSURE AIR TESTING

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## **PART 1 GENERAL**

### 1.1 WORK INCLUDED

- A. Gravity sewer main pipe.
- B. Fittings and jointing materials.
- C. Sanitary sewer service pipe.

### 1.2 REFERENCES

- A. ASTM B88 Standard Specification for Seamless Copper Water Tube.
- B. ASTM D1784 - Specification for Rigid Poly (Vinyl Chloride) PVC Compounds.
- C. ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel - Plate Loading.
- D. ASTM D3034 - Standard Specification for Type PSM PVC Sewer Pipe Fittings.
- E. ASTM D3212 - Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
- F. ASTM F477 - Standard Specification for Elastomeric Seals for Joining Plastic Pipe.
- G. ASTM F679 - Standard Specification for PVC Large Diameter Plastic Gravity Sewer Pipe and Fittings.

### 1.3 SUBMITTALS

- A. Submit product data under provisions of Section 01300.
- B. Include data on pipe materials, pipe fittings, gasket material, and accessories.

### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01600.
- B. Store and protect products under provisions of Section 01600.

## **PART 2 PRODUCTS**

### 2.1 GRAVITY SEWER MAIN

- A. Polyvinyl Chloride Pipe (PVC)
  - 1. Pipe
    - a. ASTM D3034, SDR 26 or as otherwise shown on plans.
    - b. Pipe shall be made of PVC plastic having a minimum cell classification of 12454B or 12454C as defined in ASTM D1784.

- c. The pipe shall be uniform in color, opacity, density and other physical properties. Pipe and fittings shall be marked in accordance with the relevant ASTM standard, i.e, D3034 or F679, including a date or date code.
2. Joints. ASTM D3212, stab type with elastomeric gaskets. Gaskets shall be in compliance with ASTM F477 and shall be suitable for sewage service. Solvent weld joints and couplings will not be permitted. Natural rubber gaskets will not be acceptable.
3. Fittings. PVC plastic fittings, cell classification 12454B or 12454C as defined in ASTM D1784.
4. Plain End Couplings and Adaptors for Connection to Other Pipe Materials. Can-Tex “C-5 Adaptors;” Fernco “PVC Donuts;” or “Flexible Couplings;” Nashua Pre-Cast Corporation “Flex-O-Joint;” or equal.

## 2.2 CONNECTIONS TO MANHOLES

Precast manhole bottoms with cast-in-place resilient manhole/pipe connectors	→	A-Lok “Inserta-Lok” or Dura-Tech “Dura-Seal”
Precast manholes with boxouts for grouted/concrete, manhole/pipe connections	→	Rubber ring water stop with stainless steel compression band

## PART 3 EXECUTION

### 3.1 HANDLING AND STORAGE

- A. Pipe, fittings, and accessories shall be handled in a manner that will insure installation in sound, undamaged condition. Equipment, tools, and methods used in handling and installing pipe and fittings shall not damage the pipe and fittings.
- B. Hooks inserted in ends of pipe shall have broad, well padded contact surfaces.
- C. Pipe stored on the job site shall be covered with canvas or other opaque material to protect it from the sun’s rays. Air circulation shall be provided under the covering.
- D. Ultraviolet radiation degradation evidenced by a light yellow (or brown) discoloration of the pipe shall be cause for rejection and removal of the pipe. Pipe which is not installed within 120 days of the latest factory compliance test shall not be used without the written approval of the Engineer. Pipe older than two years from date of manufacture shall not be used.

### 3.2 CUTTING PIPE

- A. Cutting shall be done in a neat manner, without damage to the pipe.
- B. Cuts shall be smooth, straight, and at right angles to the pipe axis. After cutting, the end of the pipe shall be dressed with a file to remove all roughness and sharp corners.

### 3.3 CLEANING

- A. The interior of all pipe and fittings shall be thoroughly cleaned of foreign matter before being installed and shall be kept clean until the work has been accepted.
- B. Before jointing, all joint contact surfaces shall be wire brushed if necessary, wiped clean, and kept clean until jointing is completed.
- C. Precautions shall be taken to prevent foreign material from entering the pipe during installation. Debris, tools, clothing, or other materials shall not be placed in or allowed to enter the pipe.
- D. Whenever pipe laying is stopped, the open end of the pipe shall be sealed with a watertight plug which will prevent trench water from entering the pipe.

### 3.4 INSPECTION

- A. Pipe and fittings shall be carefully examined for cracks and other defects immediately before installation; spigot ends shall be examined with particular care.
- B. All defective pipe and fittings shall be removed from site of the work.

### 3.5 ALIGNMENT

- A. Pipelines or runs intended to be straight shall be laid straight and at uniform grade between changes in grade.
- B. Straight section of piping between manholes shall be lamped by the Engineer with assistance from the Contractor.

### 3.6 LAYING PIPE

- A. Pipe shall be protected from lateral displacement by placing the specified pipe embedment material.
- B. Under no circumstances shall pipe be laid in water and no pipe shall be laid under unsuitable weather or trench conditions.
- C. Pipe shall be laid with the bell ends facing the direction of laying except when reverse laying is specifically authorized by the Engineer.
- D. The Contractor shall erect substantial batter boards at intervals of not more than 50 feet. Batter boards shall be used to determine and check pipe subgrades. Not less than three (3) batter boards shall be maintained in proper position at all times when trench grading is in progress.
- E. Other methods of maintaining alignment and grade, such as use of laser beam equipment or surveying instruments, will be considered, provided complete information describing the proposed method is submitted to the Engineer for review before pipe laying is started.
- F. All instructions and recommendations of the joint manufacturer shall be followed. Immediately before joints are pushed together, all joint surfaces shall be lubricated with the lubricant furnished by the joint manufacturer.

- G. When material is encountered which will not, in the Engineer's opinion, provide a suitable bed for construction of the sewer; granular foundations and bedding shall be installed at the Engineer's direction.
- H. Granular foundation, which is necessary due to improper trench preparation and maintenance or neglect in handling ground water, shall be installed at the Contractor's expense.
- I. Piping cast into a concrete manhole base shall be provided with manufacturer's recommended water stop collar or other suitable means of providing a watertight, structurally sound connection as recommended by the pipe manufacturer and approved by the Engineer.
- J. Service lines shall be run at a uniform slope not less than one-fourth (1/4) of an inch per foot or two (2) percent toward the point of disposal. Where this is impractical due to depth of sewer main or other structural features, pipes four (4) inches and larger in diameter may be laid at a slope not less than one-eighth (1/8) of an inch per foot, or one (1) percent when first approved by Engineer.
- K. Service line cleanouts shall be installed not more than 75 feet apart, including the developed length of the cleanout pipe.

### 3.7 VIDEO INSPECTION

Video inspection shall be conducted on all new gravity sewer lines, regardless of pipe material used. Refer to Specification Section 02705.

### 3.8 DEFLECTION TESTING OF PIPE

Deflection testing shall be conducted on all PVC pipe used for gravity sewer lines. Refer to Specification Section 02705.

### 3.9 WATER MAIN CONFLICT

- A. Sewer lines crossing water mains shall be laid to the grades indicated on the drawings. At crossings, one full length of sewer pipe shall be located so both joints will be as far from the water main as possible. Special structural support for the water and sewer pipes may be required. Sanitary sewers must cross at least 24 inches above or below water mains.
- B. Further, the sanitary sewer shall be encased in a concrete envelope a minimum of 10'-0" either side of the centerline of the water main. The concrete envelope shall provide a minimum of 8" of concrete cover around the sewer. In lieu of the concrete envelope, the sewer line may be reconstructed of ductile iron pipe such that a 20 foot length of ductile iron sewer is centered over the water main.
- C. Where a 10 foot separation between a sewer manhole and the water main cannot be maintained, the water main shall be cut as required so that a 20 foot length of pipe may be centered at the nearest point to the manhole.

### 3.10 LOW PRESSURE AIR TESTING

Refer to Specification Section 02705.

--END OF SECTION--

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DIVISION 2 – SITE CONSTRUCTION

SECTION 02705

PIPELINE INSTALLATION AND TESTING

PART 1	GENERAL
1.1	WORK INCLUDED
1.2	GENERAL
1.3	DELIVERY, STORAGE, AND HANDLING
PART 2	PRODUCTS
2.1	TEST EQUIPMENT
PART 3	EXECUTION
3.1	INSTALLATION
3.2	FIELD TESTING

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## **PART 1 GENERAL**

### **1.1 WORK INCLUDED**

This section covers field installation, hydrostatic pressure and leakage testing, lamping, and disinfection of piping specified herein. The term "piping" shall be used in this section to refer to piping systems, pipelines, or sections thereof. Pipe trenching, embedment, and backfilling are covered in other sections.

### **1.2 GENERAL**

- A. Unless otherwise specified, testing of piping shall be completed prior to final cleaning and disinfection.
- B. The Engineer shall be present during installation and testing and shall be notified of the time and place at least 3 days prior to commencement of the work. All work shall be performed to the satisfaction of the Engineer.
- C. A testing schedule and test procedure shall be submitted to the Engineer for review and acceptance not less than 21 days prior to commencement of testing. The schedule shall indicate the proposed time and sequence of testing of the piping. The testing procedure shall establish the limits of the piping to be tested, the positions of all valves during testing, the locations of temporary bulkheads, and all procedures to be followed in performing the testing.
- D. Following completion of testing, the water shall be disposed of in a manner acceptable to the Engineer. Unless otherwise permitted, the water shall be kept out of the remainder of the piping.

### **1.3 DELIVERY, STORAGE, AND HANDLING**

Pipe, fittings, and appurtenances shall be transported, stored, and handled in a manner which prevents damage. Hooks shall not be permitted to come into contact with joint surfaces. Damaged pipe and fittings shall be removed from the site.

## **PART 2 PRODUCTS**

### **2.1 TEST EQUIPMENT**

- A. All necessary connections between the piping to be tested and the water source, together with pumping equipment, water meter, pressure gauges, flanges, valves, bulkheads, bracing, blocking, other sectionalizing devices, and all other equipment, materials, and facilities required to perform the specified tests, shall be provided by the Contractor. All temporary sectionalizing devices shall be removed upon completion of testing. Vents shall be provided in test bulkheads where necessary to expel air from the piping to be tested.

- B. Test pressures for pressure lines shall be applied by means of a force pump sized to produce and maintain the required pressure without interruption during the test.
- C. Water meters and pressure gauges shall be accurately calibrated and shall be subject to review and acceptance by the Engineer.
- D. Permanent gauge connections shall be installed at each location where test gauges are connected to the piping during the required tests. Drilling and tapping of pipe walls will not be permitted. Upon completion of testing, each gauge connection shall be fitted with a removable plug or cap acceptable to the Engineer.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

#### **A. General**

1. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
2. Route piping in orderly manner and maintain gradient.
3. Group piping whenever practical at common elevations.
4. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
5. Provide clearance for installation of insulation and access to valves and fittings.
6. Prepare pipe, fittings, supports, and accessories not prefinished, ready for finish painting. Refer to Section 09900.
7. Install bell and spigot pipe with bell end upstream.
8. Unions shall be provided in piping at locations adjacent to devices or equipment which may require removal in the future and at locations required by the drawings or specifications.
9. Piping shall not obstruct openings or passageways.
10. Pipe shall be cut from measurements taken at the site and not from the drawings, and all necessary provisions shall be taken in laying out piping to provide throughout for expansion and contraction.
11. Taps for pressure gauge connections on the suction and discharge of pumping units shall be provided with a nipple and a shutoff gauge cock.
12. A snubber and gauge cock shall be provided in the piping to each pressure gauge.
13. Install piping to conserve building space and not interfere with use of space.

14. Provide access doors where valves and fittings are not exposed.
  15. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc-rich primer to welding.
  16. Establish invert elevations, slopes for drainage to 1/4 inch per foot minimum except as noted on the drawings. Maintain gradients.
  17. Install all water piping on the warm side of the building thermal insulation.
- B. Inspection. Pipe and fittings shall be carefully examined for cracks and other defects immediately before installation; spigot ends and bells shall be examined with particular care. All defective pipe and fittings shall be removed from the site of the work.
- C. Laying Pipe
1. Pipe shall be protected from lateral displacement by pipe embedment material installed as specified in the trenching section. Pipe shall not be laid in water or under unsuitable weather or trench conditions.
  2. During cold weather, particular care shall be taken in handling and laying pipe to prevent impact damage.
  3. Pipe shall be laid with bell ends facing the direction of laying, except when reverse laying is specifically permitted by the Engineer.
  4. Foreign matter shall be prevented from entering the pipe during installation.
  5. Whenever pipe laying is stopped for water lines, the open end of the line shall be sealed with a watertight plug. All water shall be removed from the trench prior to removing the plug.
  6. Whenever pipe laying is stopped for sewer lines, the open end of the pipe shall be closed with a tight-fitting end board to keep out soil. The end board shall have perforations near the center to admit water and prevent flotation of the pipe in the event the trench becomes flooded.
  7. Pipe shall be kept shaded and as cool as possible during installation and shall be covered with backfill immediately after installation.
  8. Water mains crossing sewers shall be laid to provide a minimum vertical distance of 24" between the outside of the water main and the outside of the sewer. This shall be the case when the water main is either above or below the sewer. At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required.
- D. Cleaning

1. Foreign material shall be kept out of the pipe during installation.
2. No debris, tools, clothing, or other foreign objects shall be placed in the pipe.
3. The interior of all pipe and fittings shall be thoroughly cleaned before installation and shall be kept clean until the work has been accepted.

#### E. Alignment

1. Piping shall be laid to the lines and grades indicated on the drawings. Pipelines or runs intended to be straight shall be laid straight. Deflections from a straight line or grade shall not exceed the maximum deflections specified by the manufacturer.
2. Unless otherwise specified or indicated on the drawings, and subject to acceptance by the Engineer, either shorter pipe sections or fittings shall be installed as required to maintain the indicated alignment or grade.
3. Batter boards, laser beam equipment, or surveying instruments shall be used to maintain alignment and grade. If batter boards are used to determine and check pipe subgrades, they shall be erected at intervals of not more than 25 feet. At least three batter boards shall always be maintained in proper position when trench grading is in progress.
4. If laser beam equipment is used, periodic elevation measurements shall be made with surveying instruments to verify accuracy of grades. If such measurements indicate thermal deflection of the laser beam due to differences between the ground temperature and the air temperature within the pipe, precautions shall be taken to prevent or minimize further thermal deflections.

- F. Cutting Pipe. Cutting shall comply with the pipe manufacturer's recommendations and with Chapter 7 of AWWA Manual M23. Cuts shall be smooth, straight, and at right angles to the pipe axis. After cutting, the end of the pipe shall be dressed to remove all roughness and sharp corners and shall be beveled in accordance with the manufacturer's instructions.

#### G. Jointing

1. Pipe joints shall be carefully and neatly made in accordance with the requirements which follow.
2. Threaded joints shall conform to ANSI B1.20.1, NPT, and shall be full and cleanly cut with sharp dies. Not more than three threads at each pipe connection shall remain exposed after installation. Ends of pipe shall be reamed, after threading and before assembly, to remove all burrs. Threaded joints in stainless steel piping shall be made up with teflon thread sealer and teflon thread tape applied to all male threads.
3. For flared joints, ends of annealed copper tubing shall be cut square and all burrs shall be removed. Flared ends shall be uniform without scratches or grooves.

4. Soldered and Brazed Joints: Joints in 2-inch and larger copper tubing shall be brazed. Where solder fittings are specified for lines smaller than 2-inch, joints may be soldered or brazed at the option of the Contractor. Surfaces to be joined shall be thoroughly cleaned with flint paper and coated with a thin film of flux. At each joint, tubing shall enter to the full depth of the fitting socket. Care shall be taken to avoid overheating the metal or flux.
5. Each joint shall be uniformly heated to the extent that filler metal will melt on contact. While the joint is still hot, surplus filler metal and flux shall be removed with a rag or brush.
6. Solvent-Welded Joints: Joint preparation, cutting and jointing operations shall comply with ASTM D2855. Pipe ends shall be beveled or chamfered to the dimensions recommended by the Manufacturer. Joints shall be suitably restrained to prevent movement during the curing time. Pressure testing shall not take place until after the joint has cured.
7. Flanged Joints: Bolts shall be sufficiently tightened to achieve a good seal without distortion of the flange. A plain washer shall be installed under the head and nut of the bolts used to connect plastic pipe flanges.
8. Stab-Type Joints. Jointing shall conform to the instructions and recommendations of the pipe manufacturer. All surfaces for gasketed joints shall be lubricated immediately before the joint is completed. Gaskets and lubricants shall be supplied by the pipe manufacturer, shall be suitable for use in potable water, shall be compatible with the pipe materials, shall be stored in closed containers, and shall be kept clean. Each spigot shall be suitably beveled to facilitate assembly.
9. Mechanical Joints. Mechanical joints shall be carefully assembled in accordance with the manufacturer's recommendations. If effective sealing is not obtained, the joint shall be disassembled, thoroughly cleaned, and reassembled. Overtightening of bolts to compensate for poor installation practice will not be permitted.
10. For compression joints, ends of pipe and tubing shall be cut square and all burrs shall be removed. Joint contact surfaces shall be cleaned with steel wool before assembly.
11. Push-On Joints: Jointing operations shall be in accordance with manufacturer's recommendations. Spigot ends shall be beveled and the joint surfaces lubricated with a heavy vegetable soap solution before the assembly. The lubricant shall be suitable for use in potable water.

#### H. Connections with Existing Piping

1. Connections between new work and existing piping shall be made using fittings suitable for the conditions encountered. Each connection with an existing pipe shall be made at a time and under conditions which will least interfere with service to customers, and as authorized by the Owner. Facilities shall be provided for proper

dewatering and for disposal of water removed from the dewatered lines and excavations without damage to adjacent property.

2. Special care shall be taken to prevent contamination of potable water lines when dewatering, cutting into, and making connections with existing pipe. No trench water, mud, or other contaminating substances shall be permitted to enter the lines. The interior of all pipe, fittings, and valves installed in such connections shall be thoroughly cleaned and then swabbed with, or dipped in, a 200 mg/L chlorine solution.
- I. Connection of Piping of Different Material. Contractor shall furnish and install transition fittings for all connections between piping of different materials or wall thicknesses whether of new work with existing work or new work with other new work. Transitions shall be made using transition fittings suitable for the conditions of the work. Contractor's proposed transition fitting for each location and service shall be submitted to the Engineer for review and acceptance.
  - J. Service Connections
    1. Tapping saddles or tapping sleeves shall be used for all service connections 2 inches and smaller. Direct tapping of PVC pipe will not be permitted. Fittings shall be used for service connections larger than 2 inches.
    2. Service connections for sewers shall not be installed as vertical risers but shall be laid on a slope not to exceed 2 vertical to 1 horizontal. Each service connection pipe shall have a solid bearing on undisturbed earth.
  - K. Installation of Unions, Adapters, and Valves
    1. Install unions within 2 feet downstream of valves and at equipment or apparatus connections.
    2. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.
    3. Install valves with stems upright or horizontal, not inverted.
    4. Install ball or gate valves for shut-off and to isolate equipment or part of systems.
    5. Install ball valves for throttling, bypass, or manual flow control services.
  - L. Concrete Encasement
    1. Concrete encasement shall be installed as indicated on the drawings.
    2. Concrete and reinforcing steel shall be as specified in the cast-in-place concrete section.

3. All pipe to be encased shall be suitably supported and blocked in proper position and shall be anchored against flotation.

#### M. Reaction Anchorage and Blocking

1. All bell-and-spigot or all-bell tees, Y-branches, bends, valves, and plugs which are installed in piping shall be provided with suitable reaction blocking, or other acceptable means of preventing movement of the pipe caused by internal pressure.
2. Concrete blocking shall extend from the fitting to solid, undisturbed earth and shall be installed so that all joints are accessible for repair. The dimensions of concrete reaction blocking shall be as indicated on the drawings or as directed by the Engineer. If the absence of suitable solid vertical excavation face is due to improper trench excavation, the Contractor shall furnish and install acceptable metal harness anchorages using ductile iron pipe of the appropriate class at no additional cost to the Owner.
3. Reaction blocking, anchorages, or other supports for fittings installed in fills or other unstable ground shall be provided as required by the drawings or as directed by the Engineer.

#### N. Installation of Welded Steel Pipe

1. Where welded piping is specified, make welds by oxy-acetylene process or electric process in accord with ANSI B31.1.
2. Welding Rods: Grade recommended for purpose by manufacturer; each rod stamped with manufacturer's name and identification.
3. Line Welds: Single V-butt type.
  - a. Mill or machine bevel pipe at 37-1/2 degrees to within 1/16 IN of inside wall, except that in field limited amount of pipe may be flame beveled.
  - b. Pipe with a wall thickness of 3/16 in. or less need not be beveled but may be welded by melting down into, and building up over abutting ends.
  - c. Separate abutting ends of joints before welding to permit complete fusion to bottom without overlapping.
  - d. Tack in two or more points to maintain alignment and fusion weld.
  - e. Weld continuously around pipe.
4. Make all welds of sound weld metal, thoroughly fused into ends of pipe, and to bottom of vee.

- a. Build in excess of pipe wall to give reinforcement of one-fourth pipe wall thickness.
  - b. Weld metal shall present a gradual increase in thickness from surface of pipe to center of weld.
  - c. Minimum weld width: Two and one-half times thickness of pipe wall.
5. Use welding ells at all turns in welded lines except where pipe bends are indicated or are required for flexibility. Mitered ells will not be permitted.
  6. Do not weld pipe couplings in place of welding fittings for any branch connections.
  7. Conical Welding Fittings:
    - a. Scribe and cut openings in main pipes for welded branches accurately taking care to remove all of plug and cuttings from main pipe.
    - b. Full weld fillet welds for full depth of fillet, with additional beds to form well rounded connection as recommended by the manufacturer.
    - c. Partially filled fillets not acceptable.
  8. Cut all openings into pipe for welded connections accurately to give carefully matched intersections.
  9. Make all welded fittings of same material with same pressure and temperature rating as pipe with which they are used.
  10. Make flanged connections to control valves, pump suction, and specialties with ANSI standard welding neck flanges.
    - a. All other flange connections may be made with slip-on flanges provided they are seal welded on inside.
  11. Fuse all fillet welds for flanges or fittings into pipe and plate for minimum distance of 1-1/2 times pipe wall thickness and depth of weld of 1-1/4 times pipe wall thickness

### 3.2 FIELD TESTING:

#### A. Acceptance Tests for Gravity Sanitary Sewer:

1. General:
  - a. All sewers shall be visually inspected, mandrelled and tested for infiltration and exfiltration.
  - b. Exfiltration testing shall be achieved by a low pressure air leakage test.

- c. The Contractor shall furnish all labor, equipment, tools and materials and shall perform all acceptance tests.
  - d. All tests shall be witnessed and recorded by the Engineer
2. Alignment:
- a. Sewer shall be inspected (lamped) by flashing a light between manholes or by physical passage where space permits.
  - b. Contractor shall clean pipe of excess mortar, joint sealant and other dirt and debris prior to inspection.
  - c. Determine from Lamping or Physical Inspection:
    - (1) Presence of any misaligned, displaced, or broken pipe.
    - (2) Presence of visible infiltration or other defects.
  - d. Correct defects as required prior to conducting leakage tests.
3. Leakage Tests: The leakage tests shall be performed on the full length of all sewer lines prior to acceptance.

- a. Infiltration leakage test. All sections of sewer lines shall be checked for infiltration. At each manhole where flow exists in the pipe, measurements shall be made to determine the quantity by capture or by inserting V-notch weirs in the pipe.

Repair leaks and defects until the leakage, as measured, in any section does not exceed 50 gallons per inch of pipe diameter per day per mile of pipe. (0.0375 gallons per inch of pipe diameter per hour per 100 feet of pipe).

The infiltration check and repairs shall be completed on any section prior to making the exfiltration test.

- b. Air leakage testing. The Contractor shall perform low pressure air testing of the sewer lines for exfiltration testing. Air testing shall comply with ASTM F1417.

The general testing procedure shall be as follows: Raise pressure to 4.0 psi in sections being tested, throttle the air supply to maintain between 4.0 and 3.5 psi for at least two minutes in order to allow equilibrium between air temperature and pipe walls to be obtained. After temperature has stabilized, allow the pressure to decrease to 3.5 psi. At 3.5 psi begin timing to determine the time required for pressure to drop to 2.5 psi. If the time for the air pressure to decrease from 3.5 to 2.5 psi is greater than that shown in the table below, the pipe shall be presumed free of defects.

Required Time for Length (min:sec)

Pipe Size (in.)	100 L.F.	200 L.F.	300 L.F.	400 L.F.
8	7:33	7:33	7:36	10:08
10	9:27	9:27	11:52	15:50
12	11:20	11:24	17:06	22:48
15	14:10	17:48	26:43	35:37
18	17:00	25:39	38:28	51:17
21	19:50	34:54	52:21	69:48
24	22:48	45:35	68:23	91:10
27	28:51	57:42	86:33	115:24

If air test fails to meet above requirements, repeat test as necessary after all leaks and defects have been repaired.

In areas where ground water is known to exist, increase the test pressure by 0.43 psi for each foot of depth that the ground water is above the top of the pipe.

- c. Manhole Testing: The Contractor shall perform a vacuum exfiltration test on each manhole. Vacuum testing equipment shall be as manufactured by Cherne Industries, P.A. Glazier, Inc. or approved equal.

Preliminary vacuum testing shall be conducted following manhole construction, including connection to piping, and prior to backfilling. No grout shall be placed in horizontal joints until manhole has passed both vacuum tests. All lifting holes shall be grouted. Manholes which fail the test shall be reconstructed as required to adequately seal the manhole. Grouting of leak from the interior or exterior will not be acceptable. Final vacuum testing shall be performed following backfilling and setting of the lid and frame.

Plug all pipe entering manhole. Securely brace all plugs as required. Install testing lead in manhole frame and inflate seal in accordance with manufacturer’s recommendation. A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With all valves closed, measure the time required for the vacuum to drop to 9 inches of mercury. The manhole shall pass if the time is greater than 120 seconds for a 48-inch diameter manhole and 150 seconds for a 60-inch diameter manhole.

If manhole fails the initial test, perform necessary repairs and retest until an acceptable test meeting the above requirement is achieved.

- d. Manhole Water Testing: Water testing of manholes, in lieu of the exfiltration test, is prohibited except where otherwise approved by Engineer. Where water testing is approved exfiltration tests shall be conducted by blocking off all manhole openings, filling the manhole to the top with water, and measuring the water required to maintain a constant level in the manholes.

Maintain test as necessary to determine leakage but not less than 2 hours. Repeat as necessary after repairs until leakage does not exceed 50 gallons per inch of pipe diameter per day per mile of pipe. (0.0375 gallon per inch of pipe diameter per hour per 100 feet of pipe).

For the purposes of determining the maximum allowable leakage, manholes shall be considered as sections of pipe of the diameter and height of the manhole.

#### 4. Mandrel Testing:

- a. Mandrel testing shall not be conducted prior to 30 days after backfilling is complete.
- b. Each reach of PVC gravity sewer shall be checked for excessive deflection by pulling a mandrel through the pipe.
- c. Mandrel shall be provided by Contractor.
- d. Mandrel size shall be 95 percent of the pipe inside diameter.
- e. Pipe with diametrical deflection exceeding five percent shall be uncovered and the bedding and backfill replaced to prevent excessive deflection.
- f. Repaired pipe shall be retested after repair.
- g. Contractor shall submit all deflection test results to the Engineer.

--END OF SECTION--

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DIVISION 2 – SITE CONSTRUCTION

SECTION 02725

SANITARY SEWER UNDERCROSSINGS BORE WITH CASINGS

- PART 1 GENERAL
  - 1.1 WORK INCLUDED
  - 1.2 REFERENCES
  - 1.3 SUBMITTALS
  - 1.4 DELIVERY, STORAGE, AND HANDLING
  - 1.5 PERMITS
- PART 2 PRODUCTS
  - 2.1 MATERIALS
- PART 3 EXECUTION
  - 3.1 PROTECTION AND SAFETY
  - 3.2 AUGERING
  - 3.3 CASING PIPE
  - 3.4 AUGER PITS
  - 3.5 SETTLEMENT SURVEYING
  - 3.6 CARRIER PIPE IN CASING
  - 3.7 INFILTRATION AND LEAKAGE TESTING
  - 3.8 CASING PIPE LEAKAGE INTEGRITY TESTING
  - 3.9 DISPOSAL OF EXCESS MATERIAL

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## **PART 1 GENERAL**

### **1.1 WORK INCLUDED**

- A. Installation of all sewer pipe (carrier pipe) using the dry or wet augering method at the locations indicated in plans. Dry augering shall be defined as installation of steel casing by excavating the soil at the advancing end of casing and transporting the spoil through the casing by an otherwise uncased auger, while advancing the casing by jacking at the same rate as the auger excavation progresses.
- B. Contractor shall comply with all applicable laws, regulations, ordinances, and with the requirements of the applicable railroad, highway or street department, or other utilities that will be crossed.

### **1.2 REFERENCES**

- A. American Railway Engineering Association (AREMA) Manual for Railway Engineering.
- B. American Association of State Highway and Transportation Officials (AASHTO).

### **1.3 SUBMITTALS**

- A. Submit product data as required. Include data on carrier pipe materials, casing spacers, and accessories.
- B. Submit Casing Augering Work Plan with complete drawings and written description identifying details of the proposed method of construction and the sequence of operations to be performed during construction, as required.
- C. Method of controlling line and grade of augering operation.
- D. Method of spoil and slurry removal, including surface storage and disposal.
- E. Casing pipe fabrication drawings, including joint details. Details of the pipe and casing installation.

### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site as required.
- B. Store and protect products as required.

### **1.5 PERMITS**

Owner furnished permits will include only permits required for the occupancy of the installed casing and carrier pipe beneath existing facilities. Permits and permissions that may be required for temporary access onto and across existing facilities, as required for Contractor's operations shall be obtained by the Contractor.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Casing pipe: Welded smooth steel casing pipe conforming to Standard Specifications for electric fusion (arc-welded) steel pipe (designate A53 or AI 39 Grade B). All pipe shall be new material with a minimum yield point of 35,000 psi. The minimum diameter and wall thickness shall be as indicated on the drawings. Contractor shall be responsible for increasing the casing pipe wall thickness as required to withstand all installation loadings and to increase the casing pipe diameter as required to facilitate carrier pipe installation and casing fill materials. All joints shall be fully seal welded prior to installation of the casing.
- B. Casing spacers: Factory manufactured casing spacers. A minimum of four sets of casing spacers shall be installed, at approximately equal spacing and beyond the bell and spigot, on each joint of carrier pipe. Spacers shall be RACI Type Spacers as manufactured by RACI Spacers, North America, Inc. Spacers shall be spaced and installed in conformance to manufacturer’s written instructions.
- C. Sewer pipe: Sewer pipe materials are specified in other sections.
- D. Casing Fill: None required.
- E. End Closures: End closures of casings shall consist of a neoprene rubber wrap-around casing end seal. The casing end-seal shall:
  - 1. Be manufactured of 1/8” thick neoprene rubber, 60 durometer synthetic rubber.
  - 2. Be attached to the exterior of the casing and carrier pipes by means of 1/2” wide T304 stainless steel bandings with 100% non-magnetic worm-gear mechanism.
  - 3. Have butyl mastic strips to seal edges, and be designed to facilitate installation when the carrier line has already been joined together and the installation is complete.
  - 4. Physical Properties:

Temperature Limits.....	-20° F to +212° F
Color .....	Black
Finish.....	Smooth
Durometer .....	60 ± 5
Average Tensile .....	1,000 PSI
Average Elongation .....	350%
Specific Gravity .....	1.50
Polymer Content .....	20%
  - 5. Wrap-around casing end seal shall be Advance Standard Model AW, or Engineer approved equal.

- F. Contact grouting: Used for grouting of voids on the exterior of the casing pipe. Grout for this application shall be a sand-cement mortar mix. Cement and sand shall be as specified for cast-in-place concrete.

### **PART 3 EXECUTION**

#### **3.1 PROTECTION AND SAFETY**

- A. The Contractor shall be responsible for means and methods for augering casing, installing carrier pipe, and shall ensure the safety of the work, the Contractor's employees, the public, and adjacent property, whether public or private.
- B. The Contractor shall perform construction operations in such a manner that will not interfere with the operation of street or railroad, affect underground installations, or weaken or damage any structure.

#### **3.2 AUGERING**

- A. Provide horizontal augering equipment of sufficient capacity for the diameter and length of the casing to be installed and the anticipated ground conditions.
- B. Provide heavy-duty jacks of a capacity suitable for forcing the excavating auger and casing through the ground and a suitable jacking frame or backstop. Use operating jacks constructed so that even pressure is applied to all jacks used.
- C. Provide steerable front section of casing to allow vertical grade adjustments. A water level or other means shall be provided to allow monitoring of the grade elevation of the auger casing.
- D. Set casing to be jacked on guides, properly braced together, to support the section of casing and direct it to proper line and grade. Place the whole jacking assembly so as to line up with the direction and grade of the casing pipe.
- E. In unconsolidated soil formations, bentonite may be used to seal the voids outside the wall and furnish lubrication for the installation of casing. The use of water to assist in lubrication to facilitate the removal of spoil is permitted, however, water jetting of the soil is not allowed when jacking the casing.
- F. Acceptance criteria for the carrier pipe when installed in casing shall be  $\pm 6$  inches in horizontal alignment from theoretical at any point between manholes. If the carrier pipe cannot be installed in the casing within these tolerances, the Contractor may be required to realign the casing at no additional cost to Owner, including any backfill or grouting of the abandoned hole. Any redesign of the sewer and manholes made necessary by out of tolerance casing shall be at the Contractor's expense. The installed carrier pipe must be capable of meeting the design flow and velocities for a full pipe condition.

- G. Insofar as practical and depending on the character of the soil encountered during the augering operation, conduct operations without interruption to prevent the casing pipe from seizing up in the hole before the installation is complete.
- H. The entire operation of augering and installation of casing and carrier pipes shall be acceptable to the Owner and the agency having jurisdiction. Adequate means shall be provided to keep the work free from water.
- I. There shall be no space between the earth and the outside of the casing. All voids outside of the casing pipe shall be filled with contact grout to the satisfaction of the Engineer. Sufficient care shall be exercised during grouting so as to prevent deflection or damage to the casing pipe or other facilities.
- J. Repair casing damaged in augering operations by method acceptable to the Engineer or remove and replace it.

### 3.3 CASING PIPE

- A. Steel casing shall comply with Section 02725, 2.1 A.
- B. The casing pipe shall be installed by jacking into place. Earth displaced by the casing pipe shall be removed through the interior of the conduit by hand, by auger, or by other acceptable means.
- C. Sections of the casing pipe shall be welded together to form a continuous conduit capable of resisting all stresses, including jacking stresses.
- D. The casing pipe conduit in its final position shall be straight and true in alignment and grade, as required by the drawings.
- E. There shall be no space between the earth and the outside of the casing.
- F. No interruption of traffic will be permitted at any location where tunnels are required.

### 3.4 AUGER PITS

- A. Contractor's Casing Augering Work Plan shall identify the location, size, depth and layout, and ground support of all augering and observation pits, as well as a schedule of dates that each pit is expected to be open.
- B. Auger pits that are excavated as a part of open-cut sewer construction shall be in accordance with Section 02200 - Earthwork.
- C. Contractor shall make sufficient provisions for the safety protection against traffic, and accidental or unauthorized entry in all applicable situations.
- D. Contractor shall install sheeting, lining, shoring, and bracing required for the protection of the workmen and the public.

### 3.5 SETTLEMENT SURVEYING

A. Unless otherwise specified, the Contractor shall record the ground surface elevation ahead of the augering operation. The elevation of each survey point shall be recorded with an accuracy of 0.01 feet. As a minimum, survey points shall be located as follows:

1. For road crossings. Centerline and each shoulder
2. Railroads. Track subbase at centerline of each track.
3. Utility and pipeline crossings. Directly above and 10 feet before and after the intersection
4. Long bores under improved areas such as pavements. At locations not to exceed 50 feet apart (including points located per item 1, 2 and 3, above).

B. Settlement observations shall be obtained for each shift while augering work is performed until the casing pipe is in place. Observations shall continue until any noticeable settlement has stopped. Readings shall be reported daily to Engineer. In the case of observed settlement, the monitoring points and observation frequency shall be increased as requested by the Engineer.

### 3.6 CARRIER PIPE IN CASING

Carrier pipe shall be installed in augered casings as specified herein and in accordance with Section 02705 - Pipeline Installation and Testing, as applicable.

### 3.7 INFILTRATION AND LEAKAGE TESTING

Sewer pipe installed by augering shall be tested in accordance with Section 02705 - Pipeline Installation and Testing.

### 3.8 CASING PIPE LEAKAGE INTEGRITY TESTING

All casing pipe where annular grouting is not required shall be testing for leakage integrity using a low pressure air test as described for sewers in Section 02705 - Pipeline Installation and Testing. Leakage integrity testing shall be performed after casing pipe installation and prior to beginning installation of the carrier pipe.

### 3.9 DISPOSAL OF EXCESS MATERIAL

All spoil shall be removed from the job site.

--END OF SECTION--

# Missouri Division of Labor Standards

WAGE AND HOUR SECTION



JEREMIAH W. (JAY) NIXON, Governor

## Annual Wage Order No. 17

Section 020  
CEDAR COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by

Carla Buschjost, Director  
Division of Labor Standards

This Is A True And Accurate Copy Which Was Filed With The Secretary of State: **March 10, 2010**

Last Date Objections May Be Filed: **April 9, 2010**

Prepared by Missouri Department of Labor and Industrial Relations

Building Construction Rates for  
CEDAR County

Section 020

OCCUPATIONAL TITLE	**Effective Date of Increase	*	Basic Hourly Rates	Over-Time Schedule	Holiday Schedule	Total Fringe Benefits
Asbestos Worker			\$23.72	56	28	\$10.50
Boilermaker			\$32.31	57	7	\$21.79
Bricklayers-Stone Mason			\$25.92	24	74	\$14.38
Carpenter			\$23.08	61	4	\$10.50
Cement Mason			\$21.41	64	4	\$9.12
Electrician (Inside Wireman)			\$23.40	27	9	\$10.46 + 8%
Communication Technician			USE ELECTRICIAN (INSIDE WIREMAN) RATE			
Elevator Constructor		a	\$39.610	26	54	\$21.428
Operating Engineer						
Group I			\$23.78	84	4	\$11.00
Group II			\$22.19	84	4	\$11.00
Group III			\$21.49	84	4	\$11.00
Group III-A			\$22.19	84	4	\$11.00
Group IV						
Group V			\$14.27	84	4	\$11.00
Pipe Fitter			\$26.50	19	1	\$13.07
Glazier			\$21.55	36	52	\$4.35
Laborer (Building):						
General			\$19.53	111	4	\$9.25
First Semi-Skilled			\$21.03	111	4	\$9.25
Second Semi-Skilled			\$21.03	111	4	\$9.25
Lather			USE CARPENTER RATE			
Linoleum Layer & Cutter			\$23.08	123	78	\$10.50
Marble Mason			\$20.62	124	74	\$12.03
Millwright			\$23.33	61	4	\$10.50
Iron Worker			\$24.50	50	4	\$21.50
Painter			\$19.18	7	14	\$10.42
Plasterer			\$21.65	64	4	\$9.34
Plumber			\$26.50	19	1	\$13.07
Pile Driver			\$23.33	61	4	\$10.50
Roofer			\$20.71	10	2	\$6.92
Sheet Metal Worker			\$25.91	4	24	\$12.64
Sprinkler Fitter			\$30.84	33	19	\$15.80
Terrazzo Worker			\$27.48	124	74	\$13.60
Tile Setter			\$20.62	124	74	\$12.03
Truck Driver-Teamsters						
Group I			\$25.92	31	35	\$9.40
Group II			\$26.08	31	35	\$9.40
Group III			\$26.07	31	35	\$9.40
Group IV			\$26.19	31	35	\$9.40
Traffic Control Service Driver						
Welders-Acetylene & Electric		*				

Fringe Benefit Percentage is of the Basic Hourly Rate

Attention Workers: If you are not being paid the appropriate wage rate and fringe benefits contact the Division of Labor Standards at (573) 751-3403.



**CEDAR COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**FED:** Minimum requirement per Fair Labor Standards Act means time and one-half (1 ½) shall be paid for all work in excess of forty (40) hours per work week.

**NO. 4:** Means the regular working day shall consist of eight (8) hours labor on the job between six (6) a.m. and six-thirty (6:30) p.m. and the regular working week shall consist of five (5) consecutive eight (8) hour days beginning with Monday and ending with Friday of each week. All full time or part time labor performed during such hours shall be recognized as regular working hours and paid for at the regular hourly rate. All work performed outside the regular working hours and performed during the regular work week and Saturday work, shall be paid at one & one-half (1½) times the regular rate. All recognized holidays or days locally observed as such, and Sundays shall be paid at the double (2) time rate of pay. Also, there may be a 40-hour work week which would consist of ten (10) hours each day for Monday, Tuesday, Wednesday, Thursday or Friday.

**NO. 7:** Means work between the hours of 7:00 a.m. and 6:00 p.m. daily, Monday through Saturday, as assigned by the Employer shall be considered regular hours. Weekend work shall be paid at the rate of one and one-half (1 ½) times the regular rate of pay. Weekend begins 12:01a.m. Saturday. Overtime is time worked over forty (40) hours per pay period, and shall be paid at the rate of one and one-half (1½) times the regular rate of pay. Sunday and Holidays will be paid at the rate of two (2) times the regular rate of pay.

**NO. 10:** Means the regular working day shall be scheduled to consist of at least eight (8) hours but no more than ten (10) consecutive hours, exclusive of the lunch period, unless otherwise provided. Crews shall be scheduled to commence at any time between the hours of 5:00 a.m. and 10:00 a.m. or earlier if agreed on by the majority of any one crew. Except as specifically provided for Saturdays, Sundays and holidays, all work performed by Employees anywhere in excess of forty (40) hours in one (1) work week, or in excess of ten (10) hours in one work day shall be paid at the rate of one and one-half (1½) times the regular hourly wage scale. Any work performed on a Saturday shall be paid at the rate of one and one-half (1½) times the regular hourly wage scale unless such Saturday work falls under the category of Saturday make Up Day. When this Saturday Make Up Day does occur, the Employee may work on Saturday at straight time; provided, however, if during the period worked by said Employee on Saturday, the Employee's compensable time at the straight time rate exceeds forty (40) hours, all time worked in excess of the forty (40) hours will be paid at the rate of one and one-half (1½) time the regular hourly wage scale. The provision of this Saturday Make Up Day shall not apply to any weeks in which a designated holiday is recognized. Any work performed by Employees anywhere on Sunday or holidays shall be paid at the rate of double (2) time the regular wage scale.

**NO. 19:** Means eight (8) hours of work, between 8:00 a.m. and 4:30 p.m., shall constitute a day's work. Forty (40) hours of work Monday through Friday shall constitute a workweek. The starting time may be changed to begin between the hours of six (6:00) and ten (10:00) a.m. The normal workweek may be changed to four (4) ten (10) hour days, with the following provisions: Monday through Thursday would be the normal workweek with Friday being used as scheduled workday in case of a day being lost time due to weather, any hours worked before, or after, established starting and quitting times being paid at double (2) time hourly rates of pay. The first two (2) hours performed in excess of an eight (8) hour workday, Monday through Friday, and the first ten (10) hours on Saturday, shall be paid at time and one-half (1½) the basic straight-time rate. All work performed on Sundays and holidays, and in excess of ten (10) hours a day shall be paid at double (2) the basic straight-time rate of pay.

**NO. 24:** Means eight (8) hours shall constitute a day's work on all classes of work between the hours of 6:00 a.m. and 5:30 p.m., Monday through Friday. The pay for time worked during these hours shall be at the regular wage rate. The regular workweek shall be Monday through Friday. A workweek of four (4), ten (10) hour days may be established on a per job basis. Saturday may be used for a make-up day, when working 5-8's, Friday when working 4-10's. All time worked before and after the established workday of eight (8) hours, Monday through Friday, and all time worked on Saturday shall be paid for at the rate of time and one-half (1½) except after eight (8) hours worked, then double (2) time will apply. All time worked on Sundays and the recognized holidays shall be paid at the rate of double (2) time.

**CEDAR COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 26:** Means that the regular working day shall consist of eight (8) hours worked between 6:00 a.m., and 5:00 p.m., five (5) days per week, Monday to Friday, inclusive. Hours of work at each jobsite shall be those established by the general contractor and worked by the majority of trades. (The above working hours may be changed by mutual agreement). Work performed on Construction Work on Saturdays, Sundays and before and after the regular working day on Monday to Friday, inclusive, shall be classified as overtime, and paid for at double (2) the rate of single time. The employer may establish hours worked on a jobsite for a four (4) ten (10) hour day work week at straight time pay for construction work; the regular working day shall consist of ten (10) hours worked consecutively, between 6:00 a.m. and 6:00 p.m., four (4) days per week, Monday to Thursday, inclusive. Any work performed on Friday, Saturday, Sunday and holidays, and before and after the regular working day on Monday to Thursday where a four (4) ten (10) hour day workweek has been established, will be paid at two times (2) the single time rate of pay. The rate of pay for all work performed on holidays shall be at two times (2) the single time rate of pay.

**NO. 27:** Means eight (8) hours of work between the hours of eight (8:00) a.m. and four-thirty (4:30) p.m., shall constitute a work day. Forty (40) hours within five (5) days - Monday through Friday, inclusive - shall constitute a work week. The regular starting time in the morning may be moved not more than one hour prior to 8:00 a.m.; however, in no case shall more than eight (8) hours be worked per day without the applicable overtime rate being paid. When job conditions dictate and as required by the employer, the employer shall be allowed to establish a four (4) day, ten (10) hour per day work week. This work week is defined as Monday through Thursday, with a Friday make-up day. The normal work day under a ten (10) hour four (4) day work week shall be from 8:00 a.m. to 6:30 p.m., with a one hour starting variance. The make-up day of Friday shall be instituted for specific reasons such as loss of production due to weather and Holidays. All hours worked in excess of ten (10) hours per day or forty (40) hours per week or hours worked outside the normal work week shall be paid at the applicable overtime rate. This language is not intended to change the normal five (5) day, eight (8) hours per day work week. All overtime work after a regular work day, (8) hours, Monday through Friday shall be paid at time and one-half (1½). All hours worked on Saturday shall be paid at time and one-half (1½). All other overtime on Sunday and recognized holidays shall be paid for at double (2) the straight-time rate of pay. Shift work performed between the hours of 4:30 p.m. and 1:00 a.m. (second shift) shall receive eight (8) hours pay at the regular hourly rate of pay plus 17.3% for all hours worked. Shift work performed between the hours of 12:30 a.m. and 9:00 a.m. (third shift) shall receive eight (8) hours pay at the regular hourly rate of pay plus 31.4% for all hours worked. A lunch period of thirty (30) minutes shall be allowed on each shift. All overtime work required after the completion of a regular shift shall be paid at one and one-half (1½) times the shift hourly rate.

**NO. 31:** Means a regular work week shall consist of not more than forty (40) hours of work and all work performed over and above ten (10) hours per day and forty (40) hours per week shall be paid at the rate of time and one-half (1½). A workday is to begin between 6:00 a.m. and 9:00 a.m. at the option of the Employer except when inclement weather or other conditions beyond the reasonable control of the Employer, in which event, the starting time may be advanced or delayed. Work performed on recognized holidays or days observed as such, shall receive time and one-half (1½).

**NO. 33:** Means the standard work day and week shall be eight (8) consecutive hours of work between the hours of 6:00 a.m. and 6:00 p.m., excluding the lunch period Monday through Friday, or shall conform to the practice on the job site. Four (4) days at ten (10) hours a day may be worked at straight time, Monday through Friday and need not be consecutive. All overtime, except for Sundays and holidays shall be at the rate of time and one-half (1½). Overtime worked on Sundays and holidays shall be at double (2) time.

**NO. 36:** Means eight (8) hours shall constitute a work day, Monday through Friday between the hours of 6:00 a.m. and 6:00 p.m. Saturday can be used as a makeup day if time is lost due to weather. All hours in excess of the regular forty (40) hour work week or eight (8) hours per day shall be considered overtime and shall be paid for at the rate of one and one-half (1½) times the regular rate. Employees will be paid at the rate of one and one-half (1½) times their regular rate for work performed on Saturdays. Sundays and holidays worked are to be paid at double (2) the regular hourly rate. Four (4) ten-hour days, at the option of the Employer, shall be the standard work week, consisting of a consecutive ten-hour period, Monday through Thursday or Tuesday through Friday, between the hours of 6:00 a.m. and 6:00 p.m. Forty (40) hours per week shall constitute a week's work.

**CEDAR COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 50:** Means eight (8) hours constitute a normal day's work Monday through Friday. Any time worked over eight (8) hours will normally be paid at time and one-half (1½) except for exclusions stated in some following additional sentences. The Employer, at his discretion, may start the work day between 6:00 a.m. and 9:00 a.m. Any schedule chosen shall be started at the beginning of the work week (Monday) and used for at least five days. Work may be scheduled on a four (4) days a week (Monday through Thursday) at ten (10) hours a day schedule. If such a schedule is employed, then Friday may be used as a make-up day when time is lost due to inclement weather. Time and one-half (1½) shall be paid for any work in excess of eight (8) hours in any regular work day Monday through Friday unless working 4-10's, then time and one-half (1½) after ten (10) hours. All work performed on Saturday will be time and one-half (1½). Double (2) time shall be paid for all work on Sundays and recognized holidays.

**NO 56:** Means the regular work day shall consist of eight (8) hours between 8:00 a.m. and 4:30 p.m. An optional four day work week may be utilized with the ten (10) hour clause, days Monday through Thursday or Tuesday through Friday. Work hours shall be from 7:00 a.m. to 5:30 p.m. any work performed on Monday or Friday outside the regular scheduled four (4) days shall be at one and one half (1 ½) the regular rate of pay. Work performed outside of the regular work day, and on Saturdays shall be paid at one and one half (1 ½) the regular rate of pay. Sundays and holidays shall be paid at double (2) time the regular rate of pay.

**NO. 57:** Means eight (8) hours per day shall constitute a day's work and forty (40) hours per week, Monday through Friday, shall constitute a week's work. The regular starting time shall be 8:00 a.m. The above may be changed by mutual consent of authorized personnel. When circumstances warrant, the Employer may change the regular workweek to four (4) ten-hour days at the regular time rate of pay. It being understood that all other pertinent information must be adjusted accordingly. All time worked before and after the established workday of eight (8) hours, Monday through Friday, all time worked on Saturday, shall be paid at the rate of time and one-half (1½) except in cases where work is part of an employee's regular Friday shift. All time worked on Sunday and recognized holidays shall be paid at the double (2) time rate of pay.

**NO. 61:** Means except as herein provided, eight (8) hours a day, 8:00 a.m. to 4:30 p.m., shall constitute a standard work day, and forty (40) hours per week shall constitute a week's work. The regular workday starting time of 8:00 a.m. (and resulting quitting time of 4:30 p.m.) may be moved forward to 6:00 a.m. or delayed one (1) hour to 9:00 a.m. All time worked outside of the standard work day and on Saturday shall be classified as overtime and paid the rate of time and one-half (1½). All time worked on Sunday and holidays shall be classified as overtime and paid at the rate of double (2) time. The Employer has the option of working either five (5) eight-hour days or four (4) ten-hour days to constitute a normal forty (40) hour work week. When the four (4) day ten hour work week is in effect, the standard work week shall consist of forty (40) hours, Monday through Friday, which will consist of any four (4) consecutive ten-hour four days within the five (5) day period. In the event the job is down for any reason beyond the control of the Employer, then Friday and/or Saturday may, at the option of the Employer, be worked as a make-up day, straight time not to exceed ten (10) hours per day, or forty (40) hours per week. When the five (5) day eight-hour work week is in effect, forty (40) hours per week shall constitute a week's work (normal work week being Monday through Friday). In the event the job is down for any reason beyond the control of the Employer, then Saturday may, at the option of the Employer, be worked as a make-up day, at straight time not to exceed eight (8) hours for that day, or forty (40) hours per week. A make-up day is not to be used to make up time lost due to recognized holidays.

**NO. 64:** Means eight (8) hours shall constitute a day's work beginning at 8:00 a.m. and ending at 4:30 p.m. Forty (40) hours shall constitute a week's work, Sunday through Saturday. In the event time is lost due to weather or conditions beyond the control of the Employer, the Employer may schedule work on Saturday at straight time. All work over eight (8) hours in one day, forty (40) hours in one week, or on Saturday (except as herein provided) shall be classified as overtime and be paid at the rate of time and one-half (1½). All work on Sunday or recognized holidays shall be classified as overtime and be paid at the rate of double (2) time. When the four (4) day ten-hour work week is in effect, the standard work day shall be consecutive ten (10) hour periods. Forty (40) hours per week shall constitute a week's work Sunday through Saturday inclusive. In the event the job is down for reasons beyond the contractors control, then Friday and/or Saturday may, at the option of the Employer be worked as a make-up day, straight time not to exceed ten (10) hours per day or forty (40) hours per week.

**CEDAR COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 84:** The regular working starting time of 8:00 a.m. (and resulting quitting time of 4:30 p.m.) may be moved forward to 6:00 a.m. or delayed one (1) hour to 9:00 a.m. Except as provided in this Article, eight (8) hours a day shall constitute a standard work day and forty (40) hours per week shall constitute a weeks' work, which shall begin on Sunday and end on Saturday. All time worked outside of the standard work day and on Saturday shall be classified as overtime and paid at the rate of time & one-half (1½) (except as herein provided). All time worked on Sunday and recognized holidays shall be classified as overtime and paid at the rate of double (2) time. The Employer has the option of working either five (5) eight-hour days or four (4) ten-hour days to constitute a normal forty (40) hour work week. When the four (4) ten-hour work week is in effect, the standard work day shall be consecutive ten (10) hour periods, exclusive of the lunch period, beginning at 6:30 a.m. and forty (40) hours per week shall constitute a week's work, Monday through Thursday, inclusive. In the event the job is down for any reason beyond the Employer's control, then Friday and/or Saturday may, at the option of the Employer, be worked as a make-up day, straight time not to exceed ten (10) hours or forty (40) hours per week. When the five (5) eight-hour work week is in effect, forty (40) hours per week shall constitute a week's work, Monday through Friday, inclusive. In the event the job is down for any reason beyond the Employer's control, then Saturday may, at the option of the Employer, be worked as a make-up day, straight time not to exceed eight (8) hours or forty (40) hours per week.

**NO. 111:** Means eight (8) hours shall constitute a day's work, Monday to Friday inclusive. All overtime shall be at the rate of time and one-half (1½) except Sundays, and recognized holidays, which shall be paid for at the rate of double (2) time if worked. The work day is to begin between 6:00 a. m. and 9:00 a.m. at the option of the employer. If an employer is prevented from working forty (40) hours, Monday through Friday, or any part thereof by reason of inclement weather (rain or mud), Saturday or any part thereof may be worked as a make-up day at the straight time rate. The regular work week shall start on Monday and end on Friday, except where the employer elects to work Monday through Thursday, ten (10) hours per day. All work over ten (10) hours in a day and forty (40) hours in a week shall be one and one-half (1½) times the regular hourly rate. Work prior to 6:00 a.m. will be paid at the overtime rate. The regular work day shall be either eight (8) or ten (10) hours. Employers working a four (4) ten (10) hour day week schedule will be allowed a Friday or Saturday make-up day provided workmen were prevented from working during the normal work week due to inclement weather or other conditions beyond the control of the employer. Make-up days shall not be utilized for days lost to holidays. If a job can't work forty (40) hours Monday through Thursday because of inclement weather or other conditions beyond the control of the employer, Friday or Saturday may be worked as a make-up day at straight time (if working 4-10's). Saturday may be worked as a make-up day at straight time if working (5-8's). If an employer has started the work week on a five-day, eight-hour schedule, and due to inclement weather misses any time, then he may switch to a nine (9) or (10) hour a day schedule, at straight time, for the remainder of that work week in order to make up the lost time. Employer may not use both the Saturday make-up day and 10-hour make-up day in the same week.

**NO. 123:** Means except as provided, eight (8) hours a day (8:00 A.M. to 4:30 P.M.) shall constitute a standard work day, excluding the 30-minute lunch period, and forty (40) hours per week shall constitute a week's work. All time worked outside of the standard work day and on Saturday shall be classified as overtime and paid the rate of time and one-half (except as herein provided). All time worked on Sunday and herein named holidays shall be classified as overtime and paid at the rate of double time. The Employer has the option of working either five (5) eight-hour days or four (4) ten-hour days to constitute a normal forty (40) hour work week. When the four (4) day ten-hour work week is in effect, the standard work week shall consist of forty (40) hours, Monday through Friday, which will consist of any four (4) consecutive ten (10) hour days within the five day period. In the event the job is down for any reason beyond the control of the Employer, then Friday and/or Saturday may, at the option of the Employer, be worked as a make-up day, straight time not to exceed ten (10) hours or forty (40) hours per week. Starting time will be designated by the Employer. When the five (5) day eight (8) hour work week is in effect forty (40) hours per week will constitute a week's work (normal work week being Monday through Friday). In the event the job is down for any reason beyond the control of the Employer, then Saturday may, at the option of the Employer, be worked as a make-up day; at straight time not to exceed eight (8) hours or forty (40) hours per week.

**NO. 124:** Means eight (8) hours shall constitute a day's work on all classes of work between the hours of 6:00 a.m. and 5:30 p.m., Monday through Friday. The pay for time worked during these hours shall be at the regular wage rate. The regular workweek shall be Monday through Friday. Employment from 4:30 p.m. to 12:00 midnight, Monday through Friday, shall be paid for at one and one-half (1½) times the regular hourly rate. From 12:00 midnight until 8:00 a.m. on any day shall be paid for at twice the regular hourly rate. All time worked on Sundays and the recognized holidays shall be paid at the rate of double (2) time. It is understood that forty (40) hours shall constitute a regular workweek, (5-8's) Sunday Midnight through Friday Midnight, understanding anything over eight (8) hours is one and one-half (1½) times the hourly wage rate.

**CEDAR COUNTY  
HOLIDAY SCHEDULE – BUILDING CONSTRUCTION**

**NO. 1:** All work done on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day shall be paid at the rate of double time. When one of the above holidays falls on Sunday, the following Monday shall be observed. When one of the above holidays falls on Saturday the preceding Friday shall be observed.

**NO. 2:** All work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or the days observed as such, shall be paid at the double time rate of pay.

**NO. 4:** All work done on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas Day shall be paid at the double time rate of pay. If any of the above holidays fall on Sunday, Monday will be observed as the recognized holiday. If any of the above holidays fall on Saturday, Friday will be observed as the recognized holiday.

**NO. 7:** The following days are assigned days and are recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. If a holiday falls on a Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This is applied to protect Labor Day. When a holiday falls during the normal workweek, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week. However, no reimbursement for this eight (8) hours is too paid to the workman unless worked. If workman are required to work the above enumerated holidays or days observed as such, or on Sunday, they shall receive double (2) the regular rate of pay for such work.

**NO. 9:** All work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day shall be paid for at the double time rate of pay. Any one of the above listed holidays falling on Sunday shall be observed on the following Monday and paid at the double time rate of pay as all observed holidays, if worked.

**NO. 14:** Means the following days are recognized Holidays: Memorial Day, Fourth of July, Thanksgiving Day, Christmas Day, and New Year's Day. No work shall be done on Labor Day. When falling on a Sunday and the following Monday is observed as part of the holiday, then that Monday shall be considered a holiday. Sunday and Holidays will be paid at the rate of two (2) times the regular rate of pay.

**NO. 19:** All work done on New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day shall be paid at the double time rate of pay. The employee may take off Friday following Thanksgiving Day. However, the employee shall notify his or her Foreman, General Foreman or Superintendent on the Wednesday preceding Thanksgiving Day. When one of the above holidays falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double (2) time rate. When one of the holidays falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double (2) time rate.

**NO. 24:** All work done on Christmas Day, Thanksgiving Day, New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Presidential Election Day or days locally observed as such, and Sunday shall be recognized as holidays and paid at the double time rate of pay.

**NO. 28:** All work done on New Year's Day, Veteran's Day, Memorial Day, Independence Day, Thanksgiving Day and Christmas Day shall be paid at the double time rate of pay. No work shall be performed on Labor Day except when triple (3) time is paid. When a holiday falls on Sunday, the following Monday shall be observed as the holiday.

**CEDAR COUNTY  
HOLIDAY SCHEDULE – BUILDING CONSTRUCTION**

**NO. 35:** The following days are recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid the workman unless worked. An Employer working a four (4) day, ten (10) hour schedule may use Friday as a make-up day when an observed holiday occurs during the work week. Employees have the option to work that make-up day. If workmen are required to work the above enumerated holidays or days observed as such, they shall receive time and one-half (1 ½) the regular rate of pay for such work.

**NO. 52:** All work performed on Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day shall receive the double (2) time rate of pay.

**NO. 54:** All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day shall be paid at the double (2) time rate of pay. When a holiday falls on Saturday, it shall be observed on Friday. When a holiday falls on Sunday, it shall be observed on Monday.

**NO. 74:** All work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day, shall be paid at double (2) time of the hourly rate of pay. In the event one of the above holiday's falls on Saturday, the holiday shall be celebrated on Saturday. If the holiday falls on Sunday, the holiday will be celebrated on Monday.

**NO. 78:** The following days shall be recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas. If any of the above holidays fall on Sunday, Monday will be observed as the legal holiday. If any of the above holidays fall on Saturday, Friday will be observed as the legal holiday. All time worked on Sunday and herein named holidays shall be classified as overtime and paid at the rate of double time.

Heavy Construction Rates for  
CEDAR County

Section 020

OCCUPATIONAL TITLE	*Effective Date of Increase	Basic Hourly Rates	Over-Time Schedule	Holiday Schedule	Total Fringe Benefits
<b>CARPENTER</b>					
Journeyman		\$27.32	7	16	\$10.55
Millwright		\$27.32	7	16	\$10.55
Pile Driver Worker		\$27.32	7	16	\$10.55
<b>OPERATING ENGINEER</b>					
Group I		\$24.92	5	15	\$11.35
Group II		\$24.57	5	15	\$11.35
Group III		\$24.37	5	15	\$11.35
Group IV		\$22.32	5	15	\$11.35
Oiler-Driver		\$22.32	5	15	\$11.35
<b>LABORER</b>					
General Laborer		\$21.39	4	18	\$9.54
Skilled Laborer		\$21.94	4	18	\$9.54
<b>TRUCK DRIVER-TEAMSTER</b>					
Group I		\$25.92	12	3	\$9.40
Group II		\$26.08	12	3	\$9.40
Group III		\$26.07	12	3	\$9.40
Group IV		\$26.19	12	3	\$9.40

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate sheet.

**CEDAR COUNTY  
OVERTIME SCHEDULE – HEAVY CONSTRUCTION**

**FED:** Minimum requirement per Fair Labor Standards Act means time and one-half (1 ½) shall be paid for all work in excess of forty (40) hours per work week.

**NO. 4:** Means a regular work week shall consist of not more than forty (40) hours of work, Monday through Saturday, and all work performed over and above ten (10) hours per day and forty (40) hours per week shall be paid at the rate of time & one-half (1½). Workers shall receive time and one-half (1½) for all work performed on Sundays and holidays. A work day is to begin between 6:00 a.m. and 9:00 a.m. at the option of the Employer except when inclement weather or other conditions beyond the reasonable control of the Employer prevent work, in which event, the starting time may be delayed, but not later than 12:00 noon. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward a forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid to the worker(s) unless worked.

**NO. 5:** Means a regular work week shall consist of not more than forty (40) hours work, Monday through Saturday, and all work performed over and above ten (10) hours per day and forty (40) hours per week shall be paid at the rate of time & one-half (1½). Workmen shall receive time and one-half (1½) for all work performed on Sundays and recognized holidays or days observed as such. Double (2) time shall be paid for work on Sunday or recognized holidays when and only if any other craft employees of the same employer at work on that same job site are receiving double (2) time pay for that Sunday or holiday. If a job can't work forty (40) hours, Monday through Saturday, because of inclement weather or other conditions beyond the control of the Employer, Friday and Saturday may be worked as make up days at straight time (if working 4-10's). Saturday may be worked as a make up day at straight time (if working 5-8's). Make up days shall not be utilized for days lost to holidays. A work day is to begin between 6:00 a.m. and 9:00 a.m. at the option of the Employer except when inclement weather or other conditions beyond the reasonable control of the Employer, including requirements of the owner, prevent work. In such event the starting time may be delayed but not later than 12:00 noon. Where one of the holidays falls or is observed during the work week, then all work performed over and above thirty-two (32) hours shall be paid at time & one-half (1½).

**NO. 7:** Means the regular work week shall start on Monday and end on Friday, except where the Employer elects to work Monday through Thursday, ten (10) hours per day. All work over ten (10) hours in a day or forty (40) hours in a week shall be at the overtime rate of one and one-half (1½) times the regular hourly rate. The regular work day shall be either eight (8) or ten (10) hours. If a job can't work forty (40) hours Monday through Friday because of inclement weather or other conditions beyond the control of the Employer, Friday or Saturday may be worked as a make-up day at straight time (if working 4-10's). Saturday may be worked as a make-up day at straight time (if working 5-8's). Make-up days shall not be utilized for days lost due to holidays. A workday is to begin at the option of the Employer but not later than 11:00 a.m. except when inclement weather, requirements of the owner or other conditions beyond the reasonable control of the Employer prevent work. Except as worked as a make-up day, time on Saturday shall be worked at one and one-half (1½) times the regular rate. Work performed on Sunday shall be paid at two (2) times the regular rate. Work performed on recognized holidays or days observed as such, shall also be paid at the double (2) time rate of pay.

**NO. 12:** Means a regular work week shall consist of not more than forty (40) hours of work and all work performed over and above ten (10) hours per day and forty (40) hours per week shall be paid at the rate of time & one-half (1½). A workday is to begin between 6:00 a.m. and 9:00 a.m. at the option of the Employer except when inclement weather or other conditions beyond the reasonable control of the Employer, in which event, the starting time may be advanced or delayed. Workers shall receive time and one-half (1½) for all work performed on recognized holidays or days observed as such.

**CEDAR COUNTY  
HOLIDAY SCHEDULE – HEAVY CONSTRUCTION**

**NO. 3:** The following days are recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid to the workmen unless worked. An Employer working a four (4) day, ten (10) hour schedule may use Friday as a make up day when an observed holiday occurs during the work week. Employees have the option to work that make up day. If workmen are required to work the above enumerated holidays, or days observed as such, they shall receive time & one-half (1½) the regular rate of pay for such work.

**NO. 15:** The following days are recognized as holidays: New Year's Day, Memorial Day, July Fourth, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on Sunday, it shall be observed on the following Monday. If a holiday falls on Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. If workmen are required to work the above enumerated holidays or days observed as such, they shall receive time and one-half (1½) the regular rate of pay for such work. Where one of the holidays specified falls or is observed during the workweek, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½). Workmen shall receive time and one-half (1 ½) for all work performed on Sundays. Double (2) time shall be paid for work on Sunday or recognized holidays when and only if any other craft employees of the same employer at work on that same job site are receiving double (2) time for that Sunday or holiday.

**NO. 16:** The following days are recognized as holidays: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on Sunday, it shall be observed on the following Monday. If a holiday falls on Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid to the worker unless worked. If workers are required to work the above recognized holidays or days observed as such, they shall receive double (2) the regular rate of pay for such work.

**NO. 18:** All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day shall be paid at the time and one-half (1½) rate of pay. If a holiday falls on Sunday, it shall be observed on the following Monday. If a holiday falls on Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward a forty (40) hour week; however no reimbursement for this eight (8) hours is to be paid to the working person(s) unless the holiday is worked.

## OUTSIDE ELECTRICIAN

These rates are to be used for the following counties:

Andrew, Atchison, Barry, Barton, Buchanan, Caldwell, Cedar, Christian, Clinton, Dade, Dallas, Daviess, DeKalb, Douglas, Gentry, Greene, Grundy, Harrison, Hickory, Holt, Jasper, Laclede, Lawrence, Livingston, McDonald, Mercer, Newton, Nodaway, Ozark, Polk, St. Clair, Stone, Taney, Vernon, Webster, Worth, and Wright

### COMMERCIAL WORK

Occupational Title	Basic Hourly Rate	Total Fringe Benefits
Journeyman Lineman	\$36.02	\$4.75 + 34%
Lineman Operator	\$34.10	\$4.75 + 34%
Groundman	\$23.28	\$4.75 + 34%

### UTILITY WORK

Occupational Title	Basic Hourly Rate	Total Fringe Benefits
Journeyman Lineman	\$34.96	\$4.75 + 34%
Lineman Operator	\$32.31	\$4.75 + 34%
Groundman	\$22.53	\$4.75 + 34%

**OVERTIME RATE:** Eight (8) hours of work between the hours of 8:00 a.m. and 4:30 p.m. shall constitute a work day. Forty (40) hours within the five (5) days, Monday through Friday inclusive, shall constitute the work week. Starting time may be adjusted not to exceed two (2) hours. Work performed outside of the aforementioned will be paid at the applicable overtime rate. When starting time has been adjusted, all other provisions concerning the work day shall be adjusted accordingly. The overtime rate of pay shall be one and one-half (1½) times the regular rate of wages, other than on Sundays, holidays and from Midnight until 6:00 a.m., which will be paid at double (2) the straight time rate.

**HOLIDAY RATE:** Work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or days celebrated as such, shall be paid at the double time rate of pay. If the holiday falls on Saturday, it will be observed on Friday; if the holiday falls on Sunday, it will be observed on Monday, and shall be paid for at double (2) the regular straight time rate of pay.