



MISSOURI
HIGHWAYS and TRANSPORTATION
COMMISSION

JEFFERSON CITY, MISSOURI

SPECIFICATIONS

FOR

CONSTRUCTING OR IMPROVING

IFB 9 – 080401A

DISTRICT – 5

**Building Pad and Site Improvement Work
Warsaw, Missouri**

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BIDDER CHECKLIST
FINAL CHECKLIST BEFORE SUBMITTING PROPOSAL

- _____ 1. The orange bound Request for Proposal includes a complete set of bidding forms, specifications, and appendices which are made part of the proposal by reference. It is for the bidders information and convenience only and is not to be returned with the proposal.

- _____ 2. The blue bound Proposal contains a complete set of bidding forms only. It is to be completed, executed and submitted in a sealed envelope "**Warsaw Maintenance Facility Site Improvements, Benton County, Warsaw, MO**".
 - _____ a. 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.

 - _____ b. Submit Bid Bond executed by the bidder and surety. The bidder may use the Bid Bond furnished by the Commission or AIA Document A310 or approved equivalent or attach cashier's check to Bid Bond form. Personal checks are not accepted.

 - _____ c. Complete Subcontractor section by listing major subcontractor(s) and general supervisor(s), sign as required.

 - _____ d. Complete Certification Regarding Missouri Domestic Products Procurement Act section, if applicable.

- _____ 3. If addenda are issued attach to the back of the blue bound Proposal. 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

Missouri Department of Transportation will receive bids for construction of a 130' x 70' asphalt or concrete pad, installing 122 linear feet of 18" RCP and 138 linear feet of 24" RCP, removal of 218" CMP and furnishing of rock ditch liner, rock fill, rock blanket, gravel/crushed stone and Class A excavation. Bids will be received by the Missouri Department of Transportation at its One Stop Office, 1320 Creek Trail Drive, P.O. Box 270, Jefferson City, MO 65102 until 1:00 p.m. April 1, 2008. Work site visits may be scheduled at the Warsaw Maintenance Facility, located at Route 65, Outer Road & Route 7 (North Junction), Warsaw, MO by contacting Paul Loftin at 573-751-7850 or 573-644-3839. Contact Clayton Hanks at 573-522-9565 or Clayton.Hanks@modot.mo.gov to obtain plans, forms, and information or download them at no charge from http://modot.org/business/contractor_resources/FacilitiesConstructionandMaintenance.htm.

**SECTION 00020
INVITATION TO BID**

Notice is given hereby that the Missouri Department of Transportation will accept bids for construction of the proposal marked "**Warsaw Maintenance Facility Site Improvements, Benton County, Warsaw, MO**", according to Drawings and Specifications, and described in general as:

Construction of a 130' x 70' asphalt or concrete pad, installing 122 linear feet of 18" RCP and 138 linear feet of 24" RCP, removal of 218" CMP and furnishing of rock ditch liner, rock fill, rock blanket, gravel/crushed stone and Class A excavation.

Sealed bids will be received by the Missouri Department of Transportation at its One Stop Office, 1320 Creek Trail Drive, P.O. Box 270, Jefferson City, MO 65102 until 1:00 p.m. April 1, 2008.

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

Bidders may Contact Clayton Hanks at 573-522-9565 or Clayton.Hanks@modot.mo.gov to obtain plans, forms, and information or download them at no charge from http://modot.org/business/contractor_resources/FacilitiesConstructionandMaintenance.htm.

Prevailing wages as established by the Missouri Department of Labor and Industrial Relations, for **Benton County**, as shown in the Proposal, will apply.

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

Proposals 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.**

Work site visits may be scheduled at the Warsaw Maintenance Facility, located at Route 65, Outer Road & Route 7 (North Junction), Warsaw, MO by contacting Paul Loftin at 573-751-7850 or 573-644-3839.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

Building Design Supervisor

SECTION 00100
INSTRUCTIONS TO BIDDER

1. SCOPE OF WORK

Construction of a 130' x 70' asphalt or concrete pad, installing 122 linear feet of 18" RCP and 138 linear feet of 24" RCP, removal of 218" CMP and furnishing of rock ditch liner, rock fill, rock blanket, gravel/crushed stone and Class A excavation.

2. BID FORM

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 to 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. BONDS

- A. Bid securities, a cashiers check, a Bank Money Order, or a Certified Check made payable to "Director of Revenue, Credit Road Fund", in the amount stated in the invitation to bid must accompany each bid. The successful bidder's security will be retained until he has signed the Contract and has furnished the required Certificates of Insurance.
- B. The Owner reserves the right to retain the security of all bidders until the successful bidder enters into the Contract. Other bid securities will be returned as soon as practical. If any bidder refuses to enter into a Contract, the Owner may retain his bid security as liquidated damages but not as a penalty.
- C. Prior to signing the Contract, the successful bidder will secure a Performance Bond in the amount of 100% of the Contract Sum. Surety, acceptable to the Owner, shall issue the bond. Costs of such bonds will be the responsibility of the bidder.

4. EXAMINATION OF DOCUMENTS AND SITE OF WORK

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 himself, 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.

5. 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) calendar days before opening of bids. The request shall be sent directly to the project 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.

6. 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.

7. WITHDRAWAL OF BIDS

- A. A bidder may withdraw his bid, either personally or by written request, at any time prior to the scheduled time for opening bids.
- B. No bid may be amended or withdrawn after the bid is opened.

8. AWARD OR REJECTION OF BIDS

- A. The Contract, if awarded, will be awarded to the responsible bidder who has proposed the lowest Contract Sum, 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.
- B. Award of alternates, if any, will be made in numerical order to result in the maximum amount of work being accepted within available construction funds.
- C. MoDOT is exempt from paying Missouri Sales Tax, Missouri Use Tax and Federal Excise Tax. An Exemption From Missouri Sales and Use Tax on Purchases letter and a Project Exemption Certificate (Form 5060 Rev. 10-2006) for tax-exempt purchases at retail of tangible personal property and materials for the purpose of constructing, repairing or remodeling facilities for the Missouri Highways and Transportation Commission, only if such purchases will "are related to the Commission's exempt functions and activities be furnished to the successful Bidder upon request.

9. EXECUTION OF CONTRACT

- A. The Contract, which the successful bidder will be required to execute, will be included in the Contract Documents.
- B. The bidder to whom the Contract is awarded shall, within fourteen calendar days after notice of award and receipt of Contract Documents from the Commission, sign and deliver required copies to the Commission.
- C. Upon delivery of the signed Contract, the bidder to whom the Contract is awarded shall deliver to the Commission those Certificates of Insurance required by the Contract Documents and Performance Bond, as required by the Commission.
- D. Execution of the Contract by the Commission must be done before the successful bidder may proceed with the work.

10. CONSTRUCTION TIME AND LIQUIDATED DAMAGES

- A. Time of Completion - If this proposal 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 **20 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 - It is agreed that time is of the essence. Because failure to complete the contract within the time fixed herein will cause serious inconvenience, loss, and damage to the state, liquidated damages will be assessed in the amount of **\$100.00** per working day, for each working day after the agreed completion date that the Work is not fully completed.

11. NONDISCRIMINATION

- A. The Bidder/Offeror understands that this project involves state funds and the Bidder/Offeror 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. 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 (6th) 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.

13. BIDDERS CERTIFICATION

- A. Preference in Purchasing Products: - Sections 34.073 and 34.076 RSMo 1994 give preference to Missouri corporations, firms, and individuals, when letting contracts or purchasing products. All bids will be evaluated on the basis of Sections 34.073 and 34.076 RSMo 1994. Any successful bidder which is a corporation organized in a state other than Missouri shall furnish to the owner, attached to the Proposal, a properly certified copy of its current Certificate of Authority to do business in the State of Missouri, such certificate to remain on file with the Commission. The Commission will award no Contract unless the bidder furnishes such certificate.
- B. Any successful bidder which is a corporation organized in the State of Missouri shall furnish, at its own cost, if requested, a Certificate of Good Standing issued by the Secretary of State, such certificate to remain on file with the owner.
- C. If the successful bidder is doing business in the State of Missouri under a fictitious name, he shall furnish to the Commission, attached to the Proposal, a properly certified copy of the certificate of Registration of Fictitious Name from the State of Missouri, such certificate shall remain on file with the Commission. The Commission will award no contract until the bidder furnishes such certificate.
- D. Certification Regarding 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 34.350, RSMo, does not apply if the total contract is less than One Thousand Dollars (\$1,000.00). 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 performance of the contract and to provide certification of compliance prior to payment will result in nonpayment for those goods or commodities.

Failure to complete this document 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.

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 line 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 item(s) here:

If any or all of the goods or products specified in the attached bid which you proposed 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 number the country other than the United States where each goods or product you propose to furnish is manufactured or produced; and (c) check the box(es) at left of the paragraphs below if applicable, and list the corresponding item numbers in the spaces provided.

Item	Location Where Manufactured or Produced
_____	_____
_____	_____
_____	_____
_____	_____

(use 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.

Item	Location Where Manufactured or Produced
_____	_____
_____	_____

- [] 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.

Item	Location Where Produced or Manufactured
_____	_____
_____	_____

CERTIFICATION

By submitting this document, completed as directed above, with a bid, the bidder certifies under penalty of making a 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 compliance with the Missouri Products Procurement Act.

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

UNIT PRICE PAGE

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	ITEM COST
Removal of Improvements	LS 1.0	1.0		
Class A Excavation	CUYD 1.0	127.0		
Class 3 Excavation	CUYD 1.0	54.0		
Furnishing Rock Fill	CUYD 1.0	1,489.0		
Placing Rock Fill	CUYD 1.0	1,489.0		
Type 1 Aggregate For Base (4 IN. Thick)	SQYD 1.0	1,041.0		
Gravel (A) OR Crushed Stone (B)	TONS 1.0	702.0		
Bituminous Pavement Mixtures PB64 - 22, (BP -1)	TONS 1.0	111.9		
Bituminous Pavement Mixtures PB64 - 22, (BP -1) 2 (BASE)	TONS 1.0	228.6		
Concrete Pavement	CUYD 1.0	117.0		
Furnishing Type 2 Rock Ditch Liner	CUYD 1.0	392.0		
Placing Type 2 Rock Ditch Liner	CUYD 1.0	392.0		
Furnishing Type 1 Rock Blanket	CUYD 1.0	181.0		
Placing Type 1 Rock Blanket	CUYD 1.0	181.0		
Grate And Bearing Plate (3 ft. X 2 ft. or 914 MM X 610 MM)	EA 1.0	1.0		
Mobilization	LS 1.0	1.0		
Permantent Erosion Control Geotextile	SQYD 1.0	544.0		
18 in. Corregated Metal Pipe	LF 1.0	122.0		
24 in. Reinforced Concrete Pipe Culvert	LF 1.0	138.0		
Precast Concrete Drop Inlet 3 ft. x 2 ft.	LF 1.0	3.0		
24 in. (600 MM) Precast Concrete Flared End Section	EA 1.0	1.0		
			Total	

**SECTION 00301
BID FORM**

To: The Missouri Highway and Transportation Commission
 105 West Capitol Avenue
 Jefferson City, Missouri 65101

1. The undersigned, having examined the proposed Contract Documents titled: "**Warsaw Maintenance Facility Site Improvements, Benton County, Warsaw, MO**", 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 Chief Engineer of the Missouri Department of Transportation and the Missouri Highway and Transportation Commission, for the stipulated sum of:

_____ DOLLARS (\$_____).

- 1.a. All bidders must complete the unit price page prior to execution of contract.
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

Name of Partnership

(State Name and Residence Address of All Partners)

Partner

Residence Address

Partner

Residence Address

Address for Communications

Federal Tax I.D. Number

Telephone Number

Signature of Either Partner

IF A CORPORATION

Name of Corporation

Incorporated under the laws of the
State of _____

Name and Title of Officer

Corporate License No. _____
(If a corporation organized in a state other than
Missouri, attach Certificate of Authority to do
business in the State of Missouri.)

Signature of officer

Federal Tax I.D. Number

Address for Communications

(ATTEST)

Telephone Number

(SEAL) 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.)

**SECTION 00430
SUBCONTRACTOR LISTING**

1. For portions of the 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:
_____	_____

_____	_____

_____	_____

_____	_____

_____	_____

USE ADDITIONAL SHEETS
IF REQUIRED

PROVIDE SIGNATURE
IDENTICAL TO THAT
SHOWN ON THE BID FORM

BIDDER:

by _____

**SECTION 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 State 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.

SECTION 01010
GENERAL CONDITIONS

1. General. The contractor shall do all things necessary to the performance of the contract in a substantial and acceptable manner in accordance with the specifications and plans.
2. Employer's Liability. Contractor shall furnish evidence to the Commission that with respect to the operations it performs, it either carries employers liability or worker's compensation insurance or is qualified as self-insured under the provisions of law of the state relating to worker's compensation.
3. Contractor's Bodily Injury Liability and Property Damage. The contractor shall furnish evidence to the Commission that with respect to the operations that it performs, it carries regular contractor's bodily injury liability insurance providing for a limit of not less than \$50,000 for all damages arising out of bodily injuries to or death of, one person and subject to that limit for one person, a total limit of \$100,000 for all damages arising out of bodily injuries to, or death of, two or more persons in one accident, and regular contractor's property liability damage insurance providing for a limit of not less than \$25,000 for all damages arising out of injury to, or destruction of, property in any one accident and subject to that limit per accident, a total or aggregate limit of \$100,000 for all damages arising out of injury to, or destruction of, property during the policy period. Policy requirements shall be such that insurance provided in compliance with contractor's bodily injury liability and property damage liability insurance shall cover liability of the contractor for damage because of bodily injury to, or death of, persons and injury to or destruction of, property which may be suffered by persons other than his own employees as a result of the negligence of the contractor in performing the work covered by this contract. Policy requirements shall also be such that insurance provided in compliance with contractor's property damage liability insurance shall include liability of the contractor for damage to, or destruction of property which may be suffered by persons other than its own employees as a result of blasting operations of the contractor in performing the work covered by this contract. If any part of the work is sublet, similar insurance shall be provided by or on behalf of all subcontractors to cover their operations.
4. Contractor's Protective Public Liability and Property Damage Liability Insurance. The contractor shall furnish evidence to the Commission that with respect to the operations performed for it by subcontractors, it carries in its own behalf regular contractor's protective bodily injury liability insurance providing for a limit of not less than \$100,000 for all damages arising out of bodily injury to, or death of, one person and subject to that limit for each person a total limit of \$1,000,000 for all damages arising out of bodily injuries to, or death of, two or more persons in any one accident, and regular contractor's protective property damage liability insurance providing for a limit of not less than \$100,000 for all damages arising out of injury to or destruction of, property in any one accident and subject to that limit per accident a total or aggregate limit of \$1,000,000 for all damages arising out of injury to, or destruction of, property during the policy period.
5. Duration of Insurance. The evidence of insurance required by sections 2, 3, and 4 above shall be furnished to the Commission prior to the effective date of the Notice to Proceed. All insurance herein before specified shall be carried until all work required to be performed under the terms of the contract is satisfactorily completed as evidenced by the formal acceptance by the Commission and in the event that the limits of coverage for property damage are depleted or decreased by the payment of claims, the contractor shall procure a reinstatement of the limits. The cost of all insurance required to be carried by the contractor shall be considered as completely covered by the contract price.
6. Inspection of Work. Commission's engineer 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 Commission's engineer, the contractor shall at any time before final acceptance of the work uncovers 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.

7. Change Orders. 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 Commission's engineer, authorizing and directing such changes or departures. All unauthorized work shall be at the contractor's expense and the engineer may order such unauthorized work removed and replaced at the contractor's expense.
8. 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 Commission's engineer, 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.
9. Contractor's Responsibility for Work. Until the work is accepted by Commission's engineer, 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.
10. 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 Commission's engineer.
11. 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 Commission's engineer in order to secure the completion of the work under all contracts in general harmony.
12. Temporary Suspension of Work. Commission's engineer 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 engineer 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 engineer. Liquidated damages shall not accrue during the period in which work is suspended with the approval of the engineer, 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 Commission's engineer written notice at least forty-eight (48) hours before resuming operations.
13. 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 engineer as extra work, or if additional compensation may be requested beyond the scope of such provisions, the contractor shall notify the engineer in writing of the intention to make a claim before beginning the work in question. If notification is not given and the engineer 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 engineer 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.

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.

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.

All claims filed with Missouri Highway and Transportation Commission's Secretary will be forwarded to the Missouri Department of Transportation's Claims Committee.

14. 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.
15. Review of Submittals. The architect's 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 architect is not responsible for determining the accuracy of measurements and completeness of details, for verifying quantities, or for checking fabrication or installation procedures. The architect's review does not relieve the contractor of his or her responsibilities under the contract documents.
16. 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 over 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.

END OF SECTION

SECTION 01011

SUPPLEMENTARY CONDITIONS

- A. The following supplements modify, change, delete from or add to the "General Conditions."
1. The proposed work includes the furnishing of all materials, equipment and labor for the work as set forth in the plans, proposal and specifications.
 2. The contractor will be required to remove from the Highway and Transportation Commission's property all debris.
 3. 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.
 4. 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.
 6. The plans holders list may be obtained from the One Stop Facility located at 1320 Creek Trail Dr., Jefferson City, Mo 65102, by calling 573/751-4879 or electronically down-loaded from http://www.modot.org/business/contractor_resources/FacilitiesConstructionandMaintenance.htm

B. DEFINITIONS

1. Architect: When the term "Architect" is used herein, it shall refer to Larry Carver, (Building Designer) or Jerrold Scarlett (Architect) Missouri Department of Transportation, General Services Division, (573) 526-7934, FAX (573) 526-6948.
2. Construction Inspector: When the term "Construction Inspector" is used herein, it shall refer to Kevin Griep, Missouri Department of Transportation, General Services Division, (573) 526-4860, FAX (573) 526-6948.

END OF SECTION

SECTION 01019

CONTRACT CONSIDERATIONS

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 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, 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.

- D. Construction Change Directive: Architect/Engineer 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 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.
- H. Execution of Change Orders: Architect/Engineer 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 specified requirements.
- B. If, in the opinion of the Architect/Engineer, it is not practical to remove and replace the Work, the Architect/Engineer will direct an appropriate remedy or adjust payment.

1.7 ALTERNATIVES

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

END OF SECTION

SECTION 01039

COORDINATION AND MEETINGS

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.
- 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 set-backs 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 will schedule a meeting after Notice of Award.
 - B. Attendance Required: District engineer or representative, Architect/Engineer and Contractor.
 - C. Record minutes and distribute copies within 5 days after meeting to participants, with two copies to District Engineer, Architect/Engineer, participants and those affected by decisions made.
- 1.5 SITE MOBILIZATION MEETING
- A. Architect/Engineer will schedule a meeting at the Project site prior to Contractor occupancy.
 - B. Record minutes and distributes copies within 5 days after meeting to participants, with two copies to Architect/Engineer, participants and those affected by decisions made.
- 1.6 PROGRESS MEETINGS
- A. Schedule and administer meetings throughout progress of the Work at when arranged by architect/engineer.
 - B. Architect/Engineer will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
 - C. Attendance Required: Job superintendent, major Subcontractors and suppliers, District engineer representative, Architect/Engineer, 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 PREINSTALLATION 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 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 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 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

SECTION 01300

SUBMITTALS

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 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 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 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's knowledge as contract administrator or for the Owner.
- C. Product Data For Project Close-out:
 - 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.
- 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 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's knowledge as contract administrator or for the Owner.
- C. Shop Drawings For Project Close-out:
 - 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 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's knowledge as contract administrator or for the Owner.
- C. Samples For Selection:
 - 1. Submitted to Architect/Engineer for aesthetic, color, or finish selection.
 - 2. Submit samples of finishes for Architect/Engineer 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'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'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, 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.

1.13 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting and finishing, to Architect/Engineer 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 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for the Architect/Engineer'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'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 or Owner.

END OF SECTION

SECTION 01400

QUALITY CONTROL

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 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 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 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 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.

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 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

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

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'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'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

SECTION 01600

MATERIAL AND EQUIPMENT

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 PRODUCT 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 SUBSTITUTIONS

- A. Architect/Engineer 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 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

SECTION 01650

STARTING OF SYSTEMS

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 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, 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

SECTION 01700

CONTRACT CLOSEOUT

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'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 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 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

SECTION 02220

EXCAVATING, BACKFILLING AND COMPACTING

PART 1 GENERAL

1.1 SUMMARY

- A. Excavate, backfill, compact, and grade the site to the elevations shown on the Drawings the Drawings, as specified herein, and as needed to meet the requirements of the construction shown in the Contract Documents.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity and numbers to accomplish the work of this Section in a timely manner.
- C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the soil engineer.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Comply with pertinent provisions of Section 01620.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Fill and backfill materials:
 - 1. Provide soil materials free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension, and with not more than 15% of the rocks or lumps larger than 2-3/8" in their greatest dimension.
 - 2. Fill material is subject to the approval of the soil engineer, and is that materials removed from excavations or imported from off-site borrow areas; predominantly granular, non-expansive soils free from roots and other deleterious matter.
 - 3. Do not permit rocks having a dimension greater than 1" in the upper 12" of fill or embankment.
 - 4. Cohesionless material used for structural backfill. Provide sand free from organic material and other foreign matter, and as approved by the soil engineer.
 - 5. Where granular base is called for under building slabs, provide aggregate complying with requirements of Section 03300 of these Specifications.

2.2 WEED KILLER

- A. Provide a dry, free-flowing, dust-free chemical compound, soluble in water, capable of inhibiting growth of vegetation, and approved for use on this Work by governmental agencies having

jurisdiction.

2.3 TOPSOIL

- A. Where and if shown on the Drawings or otherwise required, provide topsoil consisting of friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoil, roots, heavy or stiff clay, stones larger than 2" in greatest dimension, noxious weeds, sticks, brush, litter and other deleterious matter.
- B. Obtain topsoil from sources within the project limits, or provide imported topsoil obtained from sources outside the project limits or from both sources.

2.4 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FINISH ELEVATIONS AND LINES

- A. Comply with pertinent provisions of Section 01050.

3.3 PROCEDURES

- A. Utilities:
 - 1. Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.
 - 2. If active utility lines are encountered and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
 - 3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
 - 4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Architect and secure his instructions.
 - 5. Do not proceed with permanent relocation of utilities until written instructions are received from the Architect.
- B. Protection of persons and property:
 - 1. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.
 - 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 - 3. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.

- C. Dewatering:
 - 1. Remove all water, including rainwater encountered during trench and sub-structure work to an approved location by pumps, drains and other approved methods.
 - 2. Keep excavations and site construction area free from water.
- D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors and to other work being performed on or near the site.
- E. Maintain access to adjacent areas at all times.

3.4 EXCAVATING

- A. Perform excavating of every type of material encountered within the limits of the Work to the lines, grades and elevations indicated and specified herein.
- B. Satisfactory excavated materials:
 - 1. Transport to and place in, fill or embankment areas within the limits of the Work.
- C. Unsatisfactory excavated materials:
 - 1. Excavate to a distance below grade as directed by the soil engineer and replace with satisfactory materials.
 - 2. Include excavation of unsatisfactory materials and replacement by satisfactory materials, as parts of the work of this Section.
- D. Surplus materials:
 - 1. Dispose of unsatisfactory excavated material, and surplus satisfactory excavated material, away from the site at disposal areas arranged and paid for by the Contractor.
- E. Excavation of rock:
 - 1. Where rocks, boulders, granite, or similar material is encountered, and where such material cannot be removed or excavated by conventional earth moving or ripping equipment, take required steps to proceed with the general grading operations of the Work, and remove or excavate such material by means which will neither cause additional cost to the Owner nor endanger buildings or structures whether on or off the site.
 - 2. Do not use explosives without written permission from the Architect.
- F. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.
- G. Borrow:
 - 1. Obtain material required for fill or embankment in excess of that produces within the grading limits of the Work from borrow areas selected and paid for by the Contractor and approved by the soil engineer.
- H. Ditches and gutters:
 - 1. Cut accurately to the cross sections, grades and elevations shown.
 - 2. Maintain excavations free from detrimental quantities of leaves, sticks, trash, and other debris until completion of the Work.
 - 3. Dispose of excavated materials as shown on the Drawings or directed by the soil engineer; except do not, in any case, deposit materials less than 3'-0" from the edge of a ditch.
- I. Unauthorized excavation:
 - 1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Architect or the soil

- engineer.
 - 2. Under footings, foundations, or retaining walls:
 - a. Fill unauthorized excavations by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering the required top elevation.
 - b. When acceptable to the soil engineer, lean concrete fill may be used to bring the bottom elevation to proper position.
 - 3. Elsewhere backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed by the soil engineer.
- J. Stability of excavations:
 - 1. Slope sides of excavations to 1:1 or flatter, unless otherwise directed by the soil engineer.
 - 2. Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.
 - 3. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- K. Excavating for structures:
 - 1. Conform to elevations and dimensions shown within a tolerance of 0.10 ft, and Extending a sufficient distance from footings and foundations to permit placing and removing concrete formwork, installation of services, other construction required and for inspection.
 - 2. In excavating for footings and foundations, take care not to disturb bottom of excavation:
 - a. Excavate by hand tools to final grade just before concrete is placed.
 - b. Trim bottoms to required lines and grades to leave solid base to receive concrete.
 - 3. Excavate for footings and foundations only after general site excavating, filling and grading are complete.
- L. Excavating for pavements:
 - 1. Cut surface under pavements to comply with cross sections, elevations and grades.
- M. Cold weather protection:
 - 1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

3.5 FILLING AND BACKFILLING

- A. General:
 - 1. For each classification listed below, place acceptable soil material in layers to required subgrade elevations.
 - 2. In excavations:
 - a. Use satisfactory excavated or borrowed materials.
 - 3. Under building slabs:
 - a. Use subbase materials.
 - 4. Under building slabs:
 - a. Use granular fill, if so called for on the Drawings, complying with aggregate acceptable under Section 03300 of these Specifications.
- B. Backfill excavations as promptly as progress of the Work permits, but not until completion of the following.
 - 1. Acceptance of construction below finish grade including, where applicable, dampproofing and waterproofing.
 - 2. Inspecting, testing, approving and recording locations of underground utilities.
 - 3. Removing concrete formwork.

4. Removing shoring and bracing and backfilling of voids with satisfactory materials.
 5. Removing trash and debris.
 6. Placement of horizontal bracing on horizontally supported walls.
- C. Ground surface preparation:
1. Remove vegetation, debris, unsatisfactory soil materials, obstructions and deleterious matter from ground surface prior to placement of fills.
 2. Plow, strip, or break up sloped surfaces steeper than one vertical to four horizontal so that fill material will bond with existing surface.
 3. When existing ground surface has a density less than that specified under "compacting" for the particular area, break up the ground surface, pulverize, moisture-condition to the optimum moisture content and compact to required depth and percentage of maximum density.
- D. Placing and compacting:
1. Place backfill and fill materials in layers not more than 8" in loose depth.
 2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
 3. Compact each layer to required percentage of maximum density for area.
 4. Do not place backfill or fill material on surfaces that are muddy, frozen or containing frost or ice.
 5. Place backfill and fill materials evenly adjacent to structures, to required elevations.
 6. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each lift.
 7. Where the construction includes basement or other underground walls having structural floors over them, do not backfill such walls until the structural floors are in place and have attained sufficient strength to support the walls.

3.6 GRADING

- A. General:
1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.
 2. Smooth the finished surfaces within specified tolerance.
 3. Compact with uniform levels or slopes between points where elevations are shown on the Drawings, or between such points and existing grades.
 3. Where a change of slope is indicated on the Drawings, construct a rolled transition section having a minimum radius of approximately 8'0", unless adjacent construction will not permit such a transition or if such a transition defeats positive control of drainage.
- B. Grading outside building lines:
1. Grade areas adjacent to buildings to achieve drainage away from the structures and to prevent ponding.
 2. Finish the surfaces to be free from irregular surface changes, and:
 - a. Shape the surface of areas scheduled to be under walks to line, grade and cross-section, with finished surface not more than 0.10 ft above or below the required subgrade elevation.
 - b. Shape the surface of areas scheduled to be under pavement to line, grade and cross-section, with finished surface not more than 0.05 ft above or below the required subgrade elevation.

3.7 COMPACTING

- A. Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined according to ASTM D1557.
- B. Provide not less than the following maximum density of soil material compacted at optimum moisture content for the actual density of each layer of soil material in place and as approved by the soil engineer.
 - 1. Structures:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material at 90% of maximum density.
 - 2. Lawn and unpaved areas:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material at 90% of maximum density.
 - b. Compact the upper 12" of filled areas, or natural soils exposed by excavating, at 85% of maximum density.
 - 3. Walks:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material at 90% of maximum density.
 - 4. Pavements:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material at 90% of maximum density.
- C. Moisture control:
 - 1. Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.
 - 2. Remove and replace or scarify and air dry, soil material that is too wet to permit compacting to the specified density.
 - 3. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the soil engineer.

3.8 MAINTENANCE

- A. Protection of newly graded areas:
 - 1. Protect newly graded areas from traffic and erosion, and keep free from trash and weeds;
 - 2. Repair and establish grades in settled, eroded and rutted areas to the specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape and compact to the required density prior to further construction.

END OF SECTION

SECTION 02221

TRENCHING, BACKFILLING AND COMPACTING

PART 1 GENERAL

1.1 SUMMARY

- A. Trench, backfill, and compact as specified herein and as needed for installation of underground utilities associated with the Work.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirement and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity and numbers to accomplish the work in a timely manner.
- C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the construction soil engineer.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Comply with pertinent provisions of Section 01620.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Fill and backfill materials:
 - 1. Provide soil materials free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension, and with not more than 15% of the rocks or lumps larger than 2-3/8" in their greatest dimension.
 - 2. Fill material is subject to the approval of the owner/architect and is that material removed from excavations or imported from off-site borrow areas, predominantly granular, non-expansive soil free from roots and other deleterious matter.
 - 3. Do not permit rocks having a dimension greater than 1" in the upper 12" of fill.
 - 4. Cohesionless material used for backfill: Provide sand free from organic material and other foreign matter and as approved by the Owner/Architect

2.2 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FINISH ELEVATIONS AND LINES

- A. Comply with pertinent provision of Section 01050.

3.3 PROCEDURES

- A. Utilities:
 - 1. Unless shown to be removed, protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to trenching. If damaged, repair or replace at no additional cost to the Owner.
 - 2. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
 - 3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
 - 4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Architect and secure his instructions.
 - 5. Do not proceed with permanent relocation of utilities until written instructions are received from the Architect.
- B. Protection of persons and property:
 - 1. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.
 - 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 - 3. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.
- C. Dewatering:
 - 1. Remove all water, including rainwater, encountered during trench and sub-structure work to an approved location by pumps, drains and other approved methods.
 - 2. Keep trenches and site construction area free from water.
- D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors and to other work being performed on or near the site.
- E. Maintain access to adjacent areas at all times.

3.4 TRENCHING

- A. Comply with pertinent provisions of Section 02220 and the provisions of this Section.

- B. Provide sheeting and shoring necessary for protection of the Work and for the safety of personnel.
1. Prior to backfilling, remove all sheeting.
 2. Do not permit sheeting to remain in the trenches except when, in the opinion of the Architect, field conditions or the type of sheeting or methods of construction such as use of concrete bedding are such as to make removal of sheeting impracticable. In such cases, the Architect may permit portions of sheeting to be cut off and remain in the trench.
- C. Open cut:
1. Excavate for utilities by open cut.
 2. If conditions at the site prevent such open cut and if approved by the Architect, trenching may be used.
 3. Short sections of a trench may be tunneled if, in the opinion of the Architect, the conductor can be installed safely and backfill can be compacted properly into such tunnel.
 4. Where it becomes necessary to excavate beyond the limits of normal excavations lines in order to remove boulders or other interfering objects, backfill the voids remaining after removal of the objects as directed by the construction soil engineer.
 5. When the void is below the subgrade for the utility bedding, use suitable earth materials and compact to the relative density directed by the construction soil engineer, but in no case to a relative density less than 90%.
 6. When the void is in the side of the utility trench or open cut, use suitable earth or sand compacted or consolidated as approved by the construction soil engineer but in no case to a relative density less than 80%.
 7. Remove boulders and other interfering objects and backfill voids left by such removals, at no additional cost to the Owner.
 8. Excavating for appurtenances:
 - a. Excavate for manholes and similar structures to a distance sufficient to leave at least 12" clear between outer surfaces and the embankment or shoring that may be used to hold and protect the banks.
 - b. Overdepth excavation beyond such appurtenances that has not been directed will be considered unauthorized. Fill with sand, gravel or lean concrete as directed by the construction soil engineer and at no additional cost to the Owner.
- D. Trench to the minimum width necessary for proper installation of the utility, with sides as nearly vertical as possible. Accurately grade the bottom to provide uniform bearing for the utility.
- E. Depressions:
1. Dig bell holes and depressions for joints after the trench has been graded. Provide uniform bearing for the pipe on prepared bottom of the trench.
 2. Except where rock is encountered, do not excavate below the depth indicated or specified.
 3. Where rock is encountered, excavate rock to a minimum overdepth of 4" below the trench depth indicated or specified.
- F. Where utility runs traverse public property or are subject to governmental or utility company jurisdiction, provide depth, bedding, cover and other requirements as set forth by legally constituted authority having jurisdiction but in no case less than the depth shown in the Contract Documents.

- G. Where trenching occurs in existing lawns, remove turf in sections and keep damp. Replace turf upon completion of the backfilling.
- H. Cover:
1. Provide minimum trench depth indicated below to maintain a minimum cover over the top of the installed item below the finish grade or subgrade.
 - a. Areas subject to vehicular traffic:
 - (1) Sanitary sewers:
 - (2) Storm drains:
 - b. Areas not subject to vehicular traffic:
 - (1) Sanitary sewers: 30";
 - (2) Storm drains: 18".
 - c. All areas:
 - (1) Water lines: 30";
 - (2) Natural gas lines: 24";
 - (3) Electrical cables: 42";
 - (4) Electrical ducts: 36".
 - d. Concrete encased:
 - (1) Pipe sleeves for water and gas lines: 24";
 - (2) Sanitary sewers and storm drains: 12";
 - (3) Electrical ducts: 24".
 2. Where utilities are under a concrete structure slab or pavement, the minimum depth need only be sufficient to completely encase the conduit or pipe sleeve and electrical long-radius rigid metal conduit rise, provided it will not interfere with the structural integrity of the slab or pavement.
 3. Where the minimum cover is not provided encase the pipes in concrete as indicated.
Provide concrete with a minimum 28th day compressive strength of 2500 psi.

3.5 BEDDING

- A. Provide bedding as indicated on the Drawings.

3.6 BACKFILLING

- A. General:
1. Do not completely backfill trenches until required pressure and leakage tests have been performed, and until the utilities systems as installed conform to the requirements specified in the pertinent Sections of these Specifications.
 2. Except as otherwise specified or directed for special conditions, backfill trenches to the ground surface with selected material approved by the construction soil engineer.
 3. Reopen trenches that have been improperly backfilled, to a depth as required for proper compaction. Refill and compact as specified or otherwise correct to the approval of the construction soil engineer.
 4. Do not allow or cause any of the Work performed or installed to be covered up or enclosed by work of this Section prior to required inspections, tests and approvals.
 5. Should any of the Work be so enclosed or covered up before it has been approved, uncover all such Work and, after approvals have been made, refill and compact as specified, all at no additional cost to the Owner.
- B. Lower portion of trench:
1. Deposit approved backfill and bedding material in layers of 6" maximum thickness, and compact with suitable tampers to the density of the adjacent soil, or grade as specified herein, until there is a cover of not less than 24" over sewers and 12" over other utility lines.

2. Take special care in backfilling and bedding operations to not damage pipe and pipe coatings.
- C. Remainder of trench:
1. Except for special materials for pavements, backfill the remainder of the trench with material free from stones larger than 6" or 1/2 the layered thickness, whichever is smaller, in any dimension.
 2. Deposit backfill material in layers not exceeding the thickness specified and compact each layer to the minimum density directed by the construction soil engineer.
- D. Adjacent to buildings: Mechanically compact backfill within ten feet of buildings.
- E. Consolidation of backfill by jetting with water may be permitted, when specifically approved by the construction soil engineer, in areas other than building and pavement areas.

3.7 TEST FOR DISPLACEMENT OF SEWERS AND STORMDRAINS

- A. Check sewers and storm drains to determine whether displacement has occurred after the trench has been backfilled to above the pipe and has been compacted as specified.
- B. Flash a light between manholes or, if the manholes have not yet been constructed, between the locations of the manholes, by means of a flashlight or by reflecting sunlight with a mirror.
- C. If the illuminated interior of the pipeline shows poor alignment, displaced pipes, or any other defects, correct the defects to specified conditions and at no additional cost to the Owner.

3.8 PIPE JACKING

- A. The Contractor may, at his option, install steel pipe casings, tongue-and-groove reinforced concrete pipes, and steel pipes under existing roads or pavements by jacking into place using procedures approved by the governmental agencies having jurisdiction approved by the construction soil engineer.

3.9 TUNNELING OPERATIONS

- A. The Contractor may, at his option, tunnel pipes into position using procedures approved by the construction soil engineer and the governmental agencies having jurisdiction.

3.10 FIELD QUALITY CONTROL

- A. The construction soil engineer will inspect open cuts and trenches before installation of utilities, and will make the following tests:
 1. Assure that trenches are not backfilled until all tests have been completed.
 2. Check backfilling for proper layer thickness and compaction.
 3. Verify that test results conform to the specified requirements, and that sufficient tests are performed.
 4. Assure that defective work is removed and properly replaced.

END OF SECTION

SECTION 02342

GEOTEXTILES

PART 1 GENERAL

1.01 DESCRIPTION

Work includes furnishing and installing geosynthetic reinforcement to the lines and grades designated on the plans.

1.02 RELATED WORK

A. Section 02832 - Segmental Retaining Wall Units

1.03 REFERENCE STANDARDS

- A. ASTM D 4595 - Tensile Properties of Geotextiles by the Wide-Width Strip Method.
- B. ASTM D 4632 - Tensile Properties of Geotextiles
- C. ASTM D 52 - Tensile Creep Testing of Geosynthetics
- D. GRI:GG1 - Single Rib Geogrid Tensile Strength
- E. NCMA SRWU-1 - Determination of Connection Strength between Geosynthetics and Segmental Concrete Units
- F. NCMA - Design Manual for Segmental Retaining Walls
- G. Where specifications and reference documents conflict, the Architect/Engineer shall make the final determination of applicable document.

1.04 CERTIFICATION

A. Contractor shall submit a notarized manufacturer's certification, prior to start of work, stating that the geosynthetic reinforcement meets the requirements of this specification.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Contractors shall check the geosynthetic reinforcement upon delivery to assure that the proper grade and type of material has been received. A product certification should be provided with each shipment.
- B. The geosynthetic reinforcement shall be stored above -20 degrees F.
- C. Rolled geosynthetic material shall be stored in accordance with manufacturer's recommendations.

PART 2 MATERIALS

2.01 DEFINITIONS

- A. Geosynthetic reinforcement shall be a polymer product specifically manufactured as a soil reinforcement element that meets the requirements of this specification.
- B. Concrete segmental retaining wall (SRW) units are as detailed on the drawings and specified under Section 02832 - Segmental Retaining Wall Units.
- C. SRW Unit pins are as required per Manufacturer's recommendations.
- D. Leveling pad material is sand or gravel as recommended per Manufacturer.
- E. Reinforced backfill (infill soil) is the soil used within reinforced soil mass.

- F. Retained backfill or common backfill is the soil behind the reinforced soil mass and leveling pad.

2.02 GEOSYNTHETIC REINFORCEMENT PROPERTIES

- A. The geosynthetic reinforcement shall possess the following minimum design properties, determined by product specific testing as defined in the NCMA Design Manual for Segmental Retaining Walls (Section 3.5).

LTDS	Ci	Cds
Geogrid Type "A"	(1000 lb/ft)	(0.7) (0.7)
Geogrid Type "B"	(if required)	

PART 3 EXECUTION

3.01 FOUNDATION SOIL PREPARATION

- A. Foundation soil preparation shall be as specified in Section 02832 -SRW Units.

3.02 WALL ERECTION

- A. Wall erection shall be as specified in Section 02832 -SRW Units.

3.03 GEOSYNTHETIC REINFORCEMENT INSTALLATION

- A. The geosynthetic reinforcement shall be installed at the wall height, horizontal location and to the extent as shown the project construction plans or as directed by the Architect/Engineer.
- B. The geosynthetic reinforcement shall be laid horizontally on compacted reinforced backfill and connected to the concrete SRW units. Embedment detail shall be consistent with the SRW manufacturer's recommendations.
- C. Correct orientation (roll direction) of the geosynthetic reinforcement shall be verified by the contractor.
- D. Place segmental unit and fill in accordance with Section 02832 -SRW Units.
- E. The geosynthetic reinforcement shall be pulled taut and free of wrinkles prior to placement of soil fill. The geosynthetic may be secured in place with staples, pins, sandbags or fill as required by fill properties, fill placement procedures or weather conditions or as directed by the Architect/Engineer.
- F. For constructability considerations, maximum spacing between geogrid layers shall be 2.0 vertical feet.

DRAINAGE AGGREGATE

PART 1 GENERAL

1.01 DESCRIPTION

Work includes providing and installing all drainage aggregate materials to the lines and grades designated on the project construction plans.

1.02 RELATED WORK

- A. Section 02832 - Segmental Retaining Wall Units
- B. Section 02200 - Excavating, Backfilling and Compacting

1.03 REFERENCE STANDARDS

- A. ASTM D 3034 - Specification for Polyvinyl Chloride (PVC) Plastic Pipe
- B. AASHTO T-27 - Test Method for Gradation Limits Fine Filter Material
- C. ASTM D 1248 - Specification for Corrugated Plastic Pipe
- D. Where specifications and reference documents conflict, the Architect/Engineer shall make the final determination of applicable document.

1.04 CERTIFICATION

- A. Contractor shall submit a notarized manufacturer's certification, prior to start of work, stating that the drainage aggregate meets the requirements of this specification.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Plastic Pipe shall be stored in accordance with the manufacturer's recommendations to prevent damage and deleterious materials from becoming affixed.
- B. Drainage aggregate shall be stored to prevent contamination with other site and/or fill soils.

PART 2 MATERIALS

2.01 DEFINITIONS

- A. Drainage collection pipe shall be a perforated/slotted PVC or corrugated HDPE pipe. The pipe may be covered with a knitted or non-woven geotextile sock specifically designed to function as a filter.
- B. Drainage aggregate shall be a free draining material, relative to the surrounding soil, so as to prevent build up of hydrostatic pressure.
- C. Drainage geotextile shall have the following minimum properties or as recommended by the Design Engineer.
 - 1. AOS ASTM D 4751 70-100
 - 2. Grab Tensile ASTM D 4632 110 lb.
 - 3. Trap Tear ASTM D 4533 40 lb.
 - 4. Water Flow ASTM D 4491 75 gpm/ft.
 - 5. Puncture ASTM D 4833 40 lb.

2.02 PRODUCTS

- A. Drainage aggregate shall be a clean, 1-inch minus crushed stone or granular fill meeting the following gradation (sieve size/% passing):
 - 1 inch/100-75%, 3/4 inch/50-75%,
 - No. 4/0-60%, No. 40/0-50%, No. 200/0-5%
- B. Drainage pipe shall be manufactured in accordance with ASTM D 3034 and/or ASTM D 1248.
- C. Geotextile placed around the drainage aggregate or drainpipe shall be as outlined in Section 2.01 as recommended by the Design Engineer.

PART 3 EXECUTION

3.01 DRAINAGE COLLECTION PIPE

- A. Install the drainage collection pipe according to the line, grades and sections shown in the project construction plans.
- B. Install the drainage collection pipe to maintain gravity flow of water to outside its enforced soil zone. Daylight the drainage collection pipe at a storm sewer manhole or along a slope at an elevation lower than the lowest point of the pipe within the reinforced soil mass.
- C. The main collection drainpipe just behind the segmental units shall be a minimum of 3 inches in diameter. Any secondary collection drain pipe can gravity flow independently or tie into the main collection drainpipe with laterals at a maximum 50-foot spacing along the wall face.

3.02 DRAINAGE AGGREGATE

- A. Install the drainage aggregate to the line, grades and sections shown on the project construction plans.
- B. Place the drainage aggregate to a minimum finished thickness and widths shown on the details herein, or as directed by the Engineer.
- C. When a blanket drain is installed, a non-woven geotextile should be installed prior to aggregate placement in accordance with the details provided on the drawings.

END OF SECTION

SECTION 02720

STORM SEWERAGE SYSTEM

PART 1 GENERAL

1.1 SUMMARY

- A. Provide storm sewerage system where shown on the Drawings, as specified herein and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.2 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
 - 3. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of Section 01620.

PART 2 PRODUCTS

2.1 PIPE MATERIALS

- A. Provide pipe and associated materials of the size indicated on the Drawings and meeting the following requirements.
 - 1. Non-reinforced concrete pipe (NRCP): Provide "extra strength" complying ASTM C14.
 - 2. Clay pipe (CP): Provide "extra strength" complying with ASTM C700.
 - 3. Rectangular asbestos cement pipe (RACP) and transition units:
 - a. Provide size as indicated on Drawings.
 - b. Encase in concrete as shown on the Drawings.
 - c. Acceptable products:
 - (1) Manufactured by Industrial Building Materials Company, Los Angeles, California.

4. Polyvinyl chloride pipe (PVC):
 - a. Acceptable products:
 - (1) "Ringtite" plastic pipe and fittings, class 160, SDR 26, manufactured by Manville, Los Angeles, California.
5. Polyethylene material in plastic couplings: Comply with ASTM D2952.
6. Flexible watertight joints:
 - a. Provide rubber type gaskets for concrete pipe, complying with ASTM C433 but with shore durometer hardness type A, 40-55, in lieu of the hardness specified.
 - b. Provide factory-fabricated resilient materials for clay pipe, complying with ASTM C425.
 - c. Provide gasket and jointing materials with not more than one splice, except that two splices of rubber-gasket type will be permitted if the nominal diameter of the basket exceeds 54"

2.2 DRAINAGE STRUCTURES

- A. General:
 1. Construct manholes, inlets, and junction structures of reinforced concrete or precast reinforced concrete, complete with metal frames and covers or gratings and with fixed ladder rungs where indicated on the Drawings or required by codes.
 2. Individual wall-mounted aluminum, plastic-covered steel or galvanized steel rungs are acceptable.
- B. Materials:
 1. Concrete: Comply with provisions for 3000-psi concrete specified in Section 03300.
 2. Mortar for pipe joints and connections to other drainage structures, and manhole construction:
 - a. Comply with requirements of ASTM C270, type M, except the maximum placement time shall be one hour.
 - b. Hydrated lime complying with ASTM C141, type B, may be added to the mixture of sand and cement in an amount equal to 25% of the volume of cement used.
 - c. Provide a quantity of water in the mixture sufficient to produce a stiff workable mortar, which shall be clean and free from harmful acids, alkalis, and organic impurities. Use the mortar within 30 minutes after water is added to the mix.
 3. Precast reinforced concrete manholes:
 - a. Comply with ASTM C478, precast rings and cone sections.
 - b. Fully bed the joints between precast concrete risers and tops in mortar and smooth both interior and exterior surfaces uniformly.
 - c. Acceptable products:
 - (1) Manufactured by Alhambra Foundry, Alhambra, California.
 4. Reinforcement: Provide intermediate grade billet steel complying with ASTM A615, grade 40.
 5. Frames and covers or gratings:
 - a. Provide all gratings or covers from the same manufacturer.
 - b. Provide standard black finish, supplied as a total unit, sized as shown on the Drawings or larger sizes except where in a pavement area and with the wording "STORM DRAIN" cast into the cover.
 - c. Acceptable products:
 - (1) Manufactured by Alhambra Foundry, Alhambra, California.
 6. Precast concrete catch basins:
 - a. Provide reinforced and bottom open for field pouring to ensure slope through the structure.
 - b. Contractor may select this option in lieu of cast-in-place concrete catch basins.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 EXCAVATING, TRENCHING AND BEDDING

- A. Excavate, trench, and bed for site drains in accordance with pertinent provisions of Section 02220, and the following.
- B. Movement of construction machinery:
 - 1. Use means necessary to avoid displacement of and injury to, pipe and structures while compacting by rolling or operating equipment parallel to the pipe.
 - 2. Movement of construction machinery over a culvert or storm drain at any stage of construction is solely at the Contractor's risk.
- C. Bedding:
 - 1. Provide a bedding surface for the pipe with a firm foundation of uniform density throughout the entire length of the pipe.
 - 2. Bed the pipe carefully in a soil foundation accurately shaped and rounded to conform to the lower 1/4 of the outside perimeter of circular pipe or set the pipe in a bed of sand.
 - 3. Tamp bedding where necessary.
 - 4. Provide bell holes and depressions for pipe joints of only the length, depth, and width required for making the particular pipe joint properly.
 - 5. Where plastic pipe is used, provide a minimum of 4" of sand bedding over the top and under the pipe.

3.3 INSTALLING PIPE

- A. General:
 - 1. Carefully examine each pipe prior to placing.
 - a. Promptly set aside defective pipe and damaged pipe.
 - b. Clearly identify defects.
 - c. Do not install defective pipe or damaged pipe.
 - 2. Place pipe to the grades and alignment indicated, with a tolerance of one in 1000 vertical and one in 500 horizontal, unless otherwise directed by the Architect.
 - 3. Provide adequate facilities for lowering pipe safely into the trenches.
 - 4. Do not place pipe in water, nor place pipe when trench or weather is unsuitable for that work.
- B. Concrete and clay pipe: Place by proceeding upgrade with the spigot ends of bell and spigot pipe and the tongue ends of tongue and groove pipe, pointing in the direction of flow.

3.4 JOINTS

- A. Joining concrete pipe and clay pipe:
 - 1. Use the specified mortar ingredients.
 - 2. Use the mortar within 60 minutes from the time water is first added to the mix.
 - 3. Wipe the inside of the joint clean and smooth. Perform wiping by dragging a suitable swab or long handled brush through the pipe as installation progresses.
 - 4. Protect the mortar bead on the outside from air and sun with suitable covering until cured.

5. Unless otherwise directed by the Architect, use one of the following methods of jointing for bell and spigot and tongue and groove pipe:
 - a. Cement mortar bell and spigot joint:
 - (1) Bed the first pipe to the established gradeline, with the bell end placed upstream.
 - (2) Clean surface of bell with wet brush, and fill lower portion with mortar to such depth as to bring the inner surfaces of the abutting pipes flush and even.
 - (3) Clean the spigot end of each subsequent pipe with a wet brush and uniformly match the bell so that the sections are closely fitted.
 - (4) After laying each section, fill remainder of joint with mortar and form a bead around the outside of the joint with cheesecloth to retain mortar in place.
 - b. Flexible watertight joints:
 - (1) Use the specified materials. Equal materials may be used when specifically approved in advance by the Architect.
 - (2) Install gaskets and joint materials in accordance with the manufacturers' recommendations as approved by the Architect.
 - (3) Protect from sun, blowing dust and other deleterious agents at all times.
 - (4) Align the pipe with previously installed pipe and pull the joint together. If, while making the joint, the gasket or jointing material becomes loose and can be seen through exterior joint recess when joint is pulled to within 1" of closure, remove pipe and remake the joint.
 - (5) Inspect gaskets, and replace loose and improperly affixed gaskets and jointing materials.
- B. Polyvinyl chloride pipe joints: Install with the specified materials and in accordance with the manufacturers' recommendations as approved by the Architect, applying solvent cement to pipe and fitting as recommended in ASTM D2855.
- C. Joining pipe of different materials: Provide fittings couplings made for the pipe material jointing, or provide a concrete collar as approved by the Architect.
- D. Joining pipe of different sizes:
 1. Provide reducer fittings to the larger pipe.
 2. Where pipes are different materials as well as different sizes, use the same material for reducer fitting as in the larger pipe.
 3. Use saddle connection when branch lines join a main or collector main.
 4. Use eccentric collar joint when the slope of the pipe is less than 1%.

3.5 DRAINAGE STRUCTURES

- A. Install drainage structures in accordance with the Drawings and with the manufacturers' recommendations as approved by the Architect.

3.6 BACKFILLING

- A. Backfill and compact in accordance with pertinent provisions of Section 02220.

3.7 TESTING AND INSPECTING

- A. Provide personnel and equipment necessary, and perform tests required to demonstrate that the work of this Section has been completed in accordance with the specified requirements.

- B. Hydrostatic test on watertight joints:
1. Make a hydrostatic test on each watertight joint. Test one sample of each type watertight joint used. If one sample fails because of faulty workmanship, test an additional joint.
 2. Demonstrate that joints in reinforced and unreinforced concrete pipe comply with ASTM C443.
 3. Comply with ASTM C425 for tests of joints in clay pipe.
 4. Make tests in concrete pipe and clay pipe at an internal hydrostatic pressure of 10 p.s.i for 24 hours.
 5. Only joints within the building area and outside the building area but within ten feet of exterior walls or faces of the buildings need be tested.
 6. Replace or repair joints found to be faulty. Repeat the test and repair cycle until joints are demonstrated to meet the specified requirements.

END OF SECTION

**SECTION 03100
CONCRETE FORMWORK**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.2 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

- A. Section 03200 - Concrete Reinforcement
- B. Section 03300 - Cast-in-Place Concrete: Supply of concrete accessories for placement by this section.
- C. Section 05500 - Metal Fabrications: Supply of metal fabrications for placement by this section.

1.3 RELATED SECTIONS

- A. Section 03200 - Concrete Reinforcement.
- B. Section 03300 - Cast-in-Place Concrete.

1.4 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 318 - Building Code Requirements for Reinforced Concrete.
- C. ACI 347 - Recommended Practice For Concrete Formwork.
- D. PS 1 - Construction and Industrial Plywood.

1.5 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements; concrete to conform to required shape, line and dimension.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data on void form materials and installation requirements.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 347.

1.8 REGULATORY REQUIREMENTS

- A. Conform to applicable code for design, fabrication, erection and removal of formwork.

1.9 FIELD SAMPLES

- A. Provide under provisions of Section 01400. Coordinate with requirements stated in Section 03100 and 03300.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.
- B. Deliver void forms and installation instructions in manufacturer's packaging.
- C. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.11 COORDINATION

- A. Coordinate work under provisions of Section 01039.
- B. Coordinate this Section with other Sections of work that require attachment of components to formwork.
- C. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Architect/Engineer.

PART 2 PRODUCTS

2.1 WOOD FORM MATERIALS

- A. Plywood: Douglas Fir species; grade B/B plyform class 1 or 2; sound undamaged sheets with clean, true edges.
- B. Lumber: Douglas Fir species; standard grade; with grade stamp clearly visible.

2.2 PREFABRICATED FORMS

- A. Preformed Steel Forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- B. Pan Type: Steel of size and profile required.
- C. Tubular Column Type: Round, spirally wound laminated fiber material, surface treated with release agent, non-reusable, of sizes required.
- D. Void Forms: Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set; 2 inches thick.

2.3 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Form Release Agent: Colorless mineral oil which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.

- C. Dovetail Anchor Slot: Galvanized steel, 22 gauge thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- D. Flashing Reglets: Galvanized steel, 22 gage thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- E. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
- F. Waterstops: Rubber, minimum 1,750 p.s.i tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, wide, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 EARTH FORMS

- A. Earth forms are not permitted except for spread and column footings, which are to be square and free of debris.

3.3 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to over stressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members that are not indicated on Drawings.
- F. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.

3.4 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.5

INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items which will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts and components of other Work.
- D. Install accessories in accordance with manufacturer's instructions, straight, level and plumb. Ensure items are not disturbed during concrete placement.
- E. Install water-stops continuous without displacing reinforcement. Heat seal joints watertight.
- F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- G. Close temporary openings with tight fitting panels, flush with inside face of forms and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.6

FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
- C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
- D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.7

FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 301.

3.8

FIELD QUALITY CONTROL

- A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design and that supports, fastenings, wedges, ties and items are secure.
- B. Do not reuse wood formwork more than 2 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.9

FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

SECTION 03200
CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.

1.2 RELATED SECTIONS

- A. Section 03100 - Concrete Formwork.
- B. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 318 - Building Code Requirements For Reinforced Concrete.
- C. ACI SP-66 - American Concrete Institute - Detailing Manual.
- D. ANSI/ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.
- E. ANSI/ASTM A184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
- F. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- G. ANSI/AWS D1.4 - Structural Welding Code for Reinforcing Steel.
- H. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- I. AWS D12.1 - Welding Reinforcement Steel, Metal Inserts and Connections in Reinforced Concrete Construction.
- J. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.
- K. CRSI - Placing Reinforcing Bars.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with CRSI - Manual of Standard Practice & ACI 318.

1.5 COORDINATION

- A. Coordinate work under provisions of Section 01039.
- B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.1 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615, yield grade; deformed billet steel bars, unfinished.
- B. Reinforcing Steel Plain Bar and Rod Mats: ASTM A704, ASTM A615, Grade 60; steel bars or rods, unfinished.
- C. Stirrup Steel: ANSI/ASTM A82, unfinished.
- D. Welded Steel Wire Fabric: ASTM A815; in flat sheets.

2.2 ACCESSORY MATERIALS

- A. Tie Wire: Minimum gage annealed type.
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.
- C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel; size and shape as required.

2.3 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice ACI SP-66.

PART 3 EXECUTION

3.1 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Conform to applicable code for concrete cover over reinforcement.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cast-In-Place Concrete floors, shear walls, foundation walls and supported slabs.
- B. Floors and slabs on grade.
- C. Control, expansion and contraction joint devices associated with concrete work, including joint sealants.
- D. Equipment pads, light pole base, flagpole base, thrust blocks and manholes.

1.2 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Section 03100 - Concrete Formwork: Placement of joint device anchors in formwork.

1.3 RELATED SECTIONS

- A. Section 03100 - Concrete Formwork: Formwork and accessories.
- B. Section 03200 - Concrete Reinforcement.
- C. Section 03346 - Concrete Floor Finishing.
- D. Section 03370 - Concrete Curing.
- E. Section 07900 - Joint Sealers.

1.4 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 302 - Guide for Concrete Floor and Slab Construction.
- C. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- D. ACI 305R - Hot Weather Concreting.
- E. ACI 306R - Cold Weather Concreting.
- F. ACI 318 - Building Code Requirements for Reinforced Concrete.
- G. ANSI/ASTM D994 - Preformed Expansion Joint Filler for Concrete (Bituminous Type).
- H. ANSI/ASTM D1190 - Concrete Joint Sealer, Hot-Poured Elastic Type.
- I. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- J. ANSI/ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- K. ASTM C33 - Concrete Aggregates.

- L. ASTM C94 - Ready-Mixed Concrete.
- M. ASTM C150 - Portland cement.
- N. ASTM C260 - Air Entraining Admixtures for Concrete.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data on joint devices, attachment accessories and admixtures.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301.

1.7 COORDINATION

- A. Coordinate work under provisions of Section 01039.
- B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal, Type II - Moderate, Type V - Sulfate Resistant.
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean and not detrimental to concrete.

2.2 ADMIXTURES

- A. Air Entrainment: ASTM C260.

2.3 ACCESSORIES

- A. Bonding Agent: Polymer resin emulsion.
- B. Vapor Barrier: thick clear polyethylene film.
- C. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.

2.4 JOINT DEVICES AND FILLER MATERIALS

- A. Joint Filler Type A: ASTM D1751; ASTM D994; Asphalt impregnated fiberboard or felt, 1/2" thick; tongue and groove profile.
- B. Joint Filler Type B: ASTM D1752; Closed cell polyvinyl chloride foam, resiliency recovery of 95 percent if not compressed more than 50 percent of original thickness.
- C. Joint Filler Type C; ASTM D1752; Pre-molded sponge rubber fully compressible with recovery rate of minimum 95 percent.

- D. Expansion Joint Devices: ASTM B221 alloy, extruded aluminum; resilient filler strip with a Shore A hardness of 35 to permit plus or minus 25 percent joint movement with full recovery; extruded aluminum cover plate, of longest manufactured length at each location, flush Mounted, color as selected.
- E. Sealant: ASTM D1190; polymer based asphalt or coal tar and rubber compound.

2.5 CONCRETE MIX

- A. All concrete shall be 6 bag, Type 1 cement with a compressive strength of 3,500 p.s.i at 28 days.
- B. Mix concrete in accordance with ACI 304. Deliver concrete in accordance with ASTM C94.
- C. Use accelerating admixtures in cold weather only when approved by Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.
- D. Use calcium chloride only when approved by Architect/Engineer.
- E. Use set retarding admixtures during hot weather only when approved by Architect/Engineer.
- F. Add air entraining agent to normal weight concrete mix for work exposed to exterior.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 01039.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely and will not cause hardship in placing concrete.

3.2 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.3 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304 & ACI 301.
- B. Notify Architect/Engineer minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
- D. Separate slabs on grade from vertical surfaces with ½” thick joint filler.

- E. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- F. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface. Conform to Section 07900 for finish joint sealer requirements.
- G. Install joint devices in accordance with manufacturer's instructions.
- H. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- I. Install joint device anchors. Maintain correct position to allow joint cover to be flush with floor and wall finish.
- J. Install joint covers in longest practical length, when adjacent construction activity is complete.
- K. Apply sealants in joint devices in accordance with Section 07900.
- L. Place concrete continuously between predetermined expansion, control and construction joints.
- M. Do not interrupt successive placement; do not permit cold joints to occur.
- N. Place floor slabs in pattern indicated on drawings.
- O. Saw cut joints within 24 hours after placing. Use 3/16" thick blade, cut into 1/4 depth of slab thickness. If in-slab-heating is used cut joints 1/2 inch deep
- P. Screed floors and slabs on grade level, maintaining surface flatness of maximum.

3.4 SEPARATE FLOOR TOPPINGS

- A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.
- B. Place required dividers, edge strips, reinforcing, and other items to be cast in.
- C. Apply bonding agent to substrate in accordance with manufacturer's instructions.

3.5 CONCRETE FINISHING

- A. Provide formed concrete surfaces to be left exposed with smooth rubbed finish.
- B. Finish concrete floor surfaces to requirements of Section 03346.

3.6 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Cure concrete floor surfaces to requirements of Section 03370.
- D. Cure floor surfaces in accordance with ACI 308.

3.7

FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed in accordance with ACI 301 and under provisions of Section 01400.
- B. Provide free access to Work and cooperate with appointed firm.
- C. Submit proposed mix design to architect for review prior to commencement of Work.
- D. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
- E. Three concrete test cylinders will be taken for every 75 or less cu yards of concrete placed.
- F. One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. One slump test will be taken for each set of test cylinders taken.

3.8

PATCHING

- A. Allow Architect/Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/Engineer upon discovery.
- C. Patch imperfections as directed.

3.9

DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect/Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

END OF SECTION

SECTION 03346

CONCRETE FLOOR FINISHING

PART 1

GENERAL

1.1 SECTION INCLUDES

- A. Finishing slabs-on-grade.
- B. Surface treatment with concrete hardener, non-skid finish and sealer.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-in-Place Concrete: Prepared concrete floors ready to receive finish; control and formed expansion and contraction joints and joint devices.
- B. Section 03370 - Concrete Curing.
- C. Section 07900 - Joint Sealers.

1.3 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 302 - Guide for Concrete Floor and Slab Construction.
- C. ASTM E1155 - Determining Floor Flatness and Levelness Using the F-Number System.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data on concrete hardener, sealer and slip resistant treatment, compatibilities and limitations.

1.5 MAINTENANCE DATA

- A. Submit under provisions of Section 01700.
- B. Maintenance Data: Provide data on maintenance renewal of applied coatings.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 302.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect, and handle products to site under provisions of Section 01039.
- B. Deliver materials in manufacturer's packaging including application instructions.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Temporary Lighting: Minimum 200 W light source, placed above the floor surface, for each 100 square feet of floor being finished.
- B. Do not finish floors until the interior heating system is operational.

- C. Ventilation: Sufficient to prevent injurious gases from temporary heat or other sources affecting concrete.

1.9 COORDINATION

- A. Coordinate work under provisions of Section 01039.
- B. Coordinate the work with concrete floor placement and concrete floor curing.

PART 2 PRODUCTS

2.1 CURING/SEALING COMPOUNDS

- A. Curing/sealing compound equal to Ashford Formula as distributed by:
Curecrete Chemical Company, Inc.
1201 W. Spring Creek Place
Springville, UT 84663
(801) 489-5663

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 01039.
- B. Verify that floor surfaces are acceptable to receive the work of this section.

3.2 FLOOR FINISHING

- A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.
- B. Steel trowel surfaces that will receive carpeting, resilient flooring and seamless flooring.
- C. Steel trowel surfaces that areas scheduled to be exposed.
- D. In areas with floor drains, maintain design floor elevation at walls; slope surfaces uniformly to drains at nominal.

3.3 FLOOR SURFACE TREATMENT

- A. Apply sealer in accordance with manufacturer's instructions on floor surfaces.

3.4 TOLERANCES

- A. Maximum Variation of Surface Flatness For Exposed Concrete Floors: 1/4 inch.
- B. Maximum Variation of Surface Flatness Under Seamless Resilient Flooring: 1/8 in.
- C. Maximum Variation of Surface Flatness Under Carpeting: 1/8 in.

END OF SECTION

SECTION 03370

CONCRETE CURING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Initial and final curing of horizontal and vertical concrete surfaces.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete.
- B. Section 03346 - Concrete Floor Finishing.

1.3 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 302 - Recommended Practice for Concrete Floor and Slab Construction.
- C. ACI 308 - Standard Practice for Curing Concrete.
- D. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
- E. ASTM D2103 - Polyethylene Film and Sheeting.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 302.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products under provisions of Section 01600.
- B. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Curing/sealing compound equal to Ashford Formula as distributed by:
Curecrete Chemical Company, Inc.
1201 W. Spring Creek Place
Springville, UT 84663
(801)489-5663

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify substrate conditions under provisions of Section 01039.
- B. Verify that substrate surfaces are ready to be cured.

3.2 EXECUTION - HORIZONTAL SURFACES

- A. Cure floor surfaces in accordance with ACI 308.

3.3 EXECUTION - VERTICAL SURFACES

- A. Cure surfaces in accordance with ACI 308.

3.4 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01500.
- B. Do not permit traffic over unprotected floor surface.

END OF SECTION

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION



MATT BLUNT, Governor

Annual Wage Order No. 14

Section 008

BENTON 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

Allen E. Dillingham, Director
Division of Labor Standards

This Is A True And Accurate Copy Which Was Filed With The Secretary of State: March 9, 2007

Last Date Objections May Be Filed: April 9, 2007

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	**Effective Date of Increase	*	Basic Hourly Rates	Over-Time Schedule	Holiday Schedule	Total Fringe Benefits
Asbestos Worker			\$28.54	FED		\$1.175
Boilermaker	9/07		\$29.40	57	7	\$18.15
Bricklayers - Stone Mason			\$26.06	59	7	\$10.71
Carpenter			\$22.18	60	15	\$9.77
Cement Mason			\$21.59	9	3	\$9.70
Electrician (Inside Wireman)	9/07		\$32.18	13	72	\$13.85 + 10%
Communication Technician			USE ELECTRICIAN (INSIDE WIREMAN) RATE			
Elevator Constructor		a	\$35.855	26	54	\$16.055
Operating Engineer						
Group I	4/07		\$30.41	85	4	\$11.86
Group II	4/07		\$29.60	85	4	\$11.86
Group III	4/07		\$24.05	85	4	\$11.86
Group III-A	4/07		\$28.26	85	4	\$11.86
Group IV						
Group V	4/07		\$25.65	85	4	\$11.86
Pipe Fitter	6/07		\$35.28	2	33	\$16.28
Glazier	10/07		\$26.15	88	32	\$13.67
Laborer (Building):						
General			\$17.63	111	4	\$8.10
First Semi-Skilled			\$19.13	111	4	\$8.10
Second Semi-Skilled			\$19.13	111	4	\$8.10
Lather			USE CARPENTER RATE			
Linoleum Layer & Cutter			USE CARPENTER RATE			
Marble Mason	7/07		\$29.79	25	4	\$10.26
Millwright			\$23.18	60	15	\$9.77
Iron Worker			\$23.10	50	4	\$19.10
Painter	4/07		\$27.05	37	4	\$12.11
Plasterer			\$20.61	94	5	\$9.49
Plumber	6/07		\$30.74	45	33	\$17.07
Pile Driver			\$23.18	60	15	\$9.77
Roofer	4/07		\$20.01	10	2	\$5.92
Sheet Metal Worker	7/07		\$33.62	17	22	\$14.06
Sprinkler Fitter	8/07		\$29.84	33	19	\$13.40
Terrazzo Worker	7/07		\$29.79	25	4	\$10.26
Tile Setter	7/07		\$29.79	25	4	\$10.26
Truck Driver - Teamster						
Group I	5/07		\$24.72	31	35	\$8.35
Group II	5/07		\$24.88	31	35	\$8.35
Group III	5/07		\$24.87	31	35	\$8.35
Group IV	5/07		\$24.99	31	35	\$8.35
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.

**Annual Incremental Increase

*SEE FOOTNOTE PAGE

ANNUAL WAGE ORDER NO. 14

10/07

**BENTON 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. 2: Means the maximum of eight (8) hours shall constitute a day's work beginning at 8:00 a.m. to 12:00 noon, 12:30 p.m. to 4:30 p.m. The maximum work week shall be forty (40) hours beginning Monday at 8:00 a.m. and ending Friday at 4:30 p.m. Because of traffic, parking or other circumstances, the hours of work on any project may be any continuous 8½ hours period (8 hours of work plus 30 minutes for lunch) between 7:00 a.m. and 4:30 p.m. When circumstances warrant and when it is mutually beneficial and agreed to, the Employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of 7:00 a.m. and 6:00 p.m. Monday through Thursday, with one-half (½) hour allowed for a lunch period each day. Friday may be used as a make-up day. After ten (10) hours in a workday, or forty (40) hours in a workweek, overtime shall be paid at a rate of one and one-half (1½) times the regular rate of pay. Overtime performed Monday through Saturday shall be paid at the rate of one and one-half (1½) times the regular rate of pay. Sundays and recognized holidays shall be paid at the double (2) time rate of pay. Labor Day shall be paid at triple (3) time. Shift work may be performed at the option of the Contractor. However, whenever shift work is performed it must cover a period not less than (5) consecutive working days. The day shift shall work a regular eight (8) hours shift as outlined above. Employees working a second shift shall receive an additional \$0.25 above the regular hourly rate and perform seven and one-half (7½) hours work for eight (8) hours pay. Third shift employees shall be paid an additional \$0.50 above the regular hourly rate and work seven (7) hours for eight (8) hours pay. In the event a first shift is not required, a second and third shift employee shall receive an additional 15% of the base rate and receive pay for actual hours worked.

NO. 9: Means 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 hour to 9:00 a.m. All work performed in excess of the regular work day and on Saturday shall be compensated at one and one-half (1½) times the regular pay. In the event time is lost during the work week due to weather conditions, the Employer may schedule work on the following Saturday at straight time. All work accomplished on Sunday and holidays shall be compensated for at double the regular rate of wages. The work week shall be Monday through Friday, except for midweek holidays.

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. 13: Means a regular workday shall consist of eight (8) hours between 8:00 a.m. and 4:30 p.m. Forty (40) hours, within five (5) days -- Monday through Friday inclusive -- shall constitute the regular workweek. The Employer may alter the above stated hours by two (2) hours for an early starting and quitting time only, not to exceed eight (8) hours of work in any one day. The employer may institute a work week consisting of four (4) consecutive ten (10) hour days between the hours of 7:00 a.m. and 6:00 p.m., Monday through Thursday. Friday may be used as a make-up day. After ten (10) hours in a workday, or forty (40) hours in a workweek, overtime shall be paid at a rate of one and one-half (1½) times the regular rate of pay. The first four (4) hours of overtime after the normal workday, each day Monday through Friday and the first ten (10) hours of overtime on Saturdays shall be paid for at one and one-half (1½) times the regular straight time rate of pay. All other work performed outside of the regularly scheduled working hours and outside of the first ten (10) hours worked on Saturdays shall be paid for at double (2) the regular straight time rate of pay. Sundays and the recognized holidays shall be paid for at double (2) the regular straight time rate of pay, if worked. Shift work performed between the hours of 4:30 p.m. and 12:30 a.m. (second shift) shall be paid at eight (8) hours pay at the regular hourly rate plus ten (10%) percent for seven and one-half (7½) hours work. Shift work performed between the hours of 12:30 a.m. and 8:00 a.m. (third shift) shall be paid at eight (8) hours pay at the regular hourly rate plus fifteen (15%) percent for seven (7) hours work. 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.

**BENTON COUNTY
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

NO. 17: Means the regular working day shall consist of eight (8) hours of labor between eight (8) a.m. and five (5) p.m. and the regular work week shall consist of five (5) consecutive eight (8) hour days of labor beginning on 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. Except as otherwise provided, all work performed outside of regular working hours during the regular work week, shall be at double (2) times the regular rate. When circumstances warrant and when it is mutually beneficial and agreed to by interested parties, the Employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of six (6) a.m. and five (5) p.m., Monday through Thursday. Friday may be used as a make-up day. The make-up day will be voluntary, and a decision not to work may not be held against the employee. When working four (4) ten (10) hour days overtime will be paid at the time and one-half (1½) rate for the eleventh (11th) and twelfth (12th) hour, all other work will be paid at the double (2) time rate of pay. The first two (2) hours of overtime, Monday through Friday, and the first eight (8) hours on Saturday shall be at time and one-half (1½) for all work. All other overtime shall be at double (2) time. The first two (2) hours of overtime must be concurrent with the regular work day, two (2) hours prior to or following the regular work day are at time and one-half (1½). The regular workday (as previously defined) on Saturday is paid at time and one-half (1½). Work performed outside of the regular Saturday work day is at double (2) time. All work performed on recognized holidays, or days locally observed as such, and Sundays shall be paid at the double (2) time rate of pay. The starting time may be varied by one (1) hour.

NO. 25: Means regular working hours of eight (8) hours shall constitute a working day between the hours of 8:00 a.m. to 4:30 p.m. in a forty (40) hour working week of Monday through Friday. Employment on Saturday, Sunday and legal holidays, and employment before or after the regular working hours shall be considered overtime. Employment on Saturday, Sunday and legal holidays shall be paid for at twice (2) the regular hourly rate. 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 (2) the regular hourly rate.

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. 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 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, 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. 37: The Employer may choose, at his discretion, to work five eight hour days or four ten hour days with a Friday make-up day, Monday through Friday at straight time. Overtime shall be paid after eight (8) hours when working "five eights" and after ten hours when working "four tens". All work performed on Sundays and recognized holidays shall be paid for at the rate of double (2) time. All Saturday work shall be paid for at the rate of time and one-half (1½) the regular wage rate. All night work during the regular work week other than the above-mentioned days shall be paid for at the rate of time and one-half (1½) the regular wage scale until midnight and double (2) time after midnight except make-up time will be allowed under the following condition: In the event of inclement weather on exterior projects which prevents working the full regular eight (8) hour day, forty (40) hour work week schedule, a Saturday make-up day can be granted. Then said work on Saturday shall be paid at the straight time rate of pay up to a maximum total of forty (40) hours per week.

**BENTON COUNTY
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

NO. 45: Means eight (8) hours shall constitute a day's work, beginning at 8:00 a.m. and ending at 4:30 p.m. The regular work week shall be forty (40) hours, beginning Monday, 8:00 a.m. and ending at 4:30 p.m. Friday. Because of traffic, parking and other circumstances, the hours of work on any project may begin as early as 6:00 a.m. with eight (8) hours worked between 6:00 a.m. and 4:30 p.m. When circumstances warrant and when it is mutually beneficial and agreed to, the employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of 7:00 a.m. and 6:00 p.m., Monday through Thursday. Friday may be used as a make-up day. After ten (10) hours in a workday, or forty (40) hours in a workweek, overtime shall be paid at a rate of one and one-half (1½) times the regular rate of pay. All overtime Monday through Saturday shall be paid at the rate of time and one-half (1½) the regular rate of pay. Sunday and recognized holidays shall be paid at double (2) time. Labor Day shall be paid at triple (3) time. Shift work may be performed at the option of the Contractor. However, whenever shift work is performed it must cover a period not less than (5) consecutive working days. The day shift shall work a regular eight (8) hours shift as outlined above. The hourly rate for second shift (seven and one-half hours worked for eight hours paid) shall be twenty-five cents (\$.25) over and above the hourly rate. The hourly rate for third shift (seven hours worked, eight hours paid) shall be fifty cents (\$.50) above the hourly rate. If no first shift is worked, second and third shift employees shall receive an additional fifteen percent (15%) over and above the hourly rate for actual hours worked.

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. 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. 59: Means that except as herein provided, eight (8) hours a day shall constitute a standard work day, and forty (40) hours per week shall constitute a week's work. All time worked outside of the standard eight (8) hour 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) ten-hour work week is in effect, the standard work day shall be consecutive ten (10) hour periods between the hours of 6:30 a.m. and 6:30 p.m. Forty (40) hours per week shall constitute a weeks 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 day (8) 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. The regular starting time (and resulting quitting time) may be moved to 6:00 a.m. or delayed to 9:00 a.m. Make-up days shall not be utilized for days lost due to holidays.

**BENTON COUNTY
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

NO. 60: Means the Employer shall have the option of working five 8-hour days or four 10-hour days Monday through Friday. If an Employer elects to work five 8-hour days during any work week, hours worked more than eight (8) per day or forty (40) per week shall be paid at time and one-half (1½) the hourly wage rate plus fringe benefits Monday through Friday. **SATURDAY MAKE-UP DAY:** 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. It is agreed by the parties that the make-up day is not to be used to make up time lost due to recognized holidays. If an Employer elects to work four 10-hour days, between the hours of 6:30 a.m. and 6:30 p.m. in any week, work performed more than ten (10) hours per day or forty (40) hours per week shall be paid at time and one half (1½) the hourly wage rate plus fringe benefits Monday through Friday. If an Employer is working 10-hour days and loses a day due to inclement weather, the Employer may work ten (10) hours on Friday at straight time. Friday must be scheduled for no more than ten (10) hours at the straight time rate, but all hours worked over the forty (40) hours Monday through Friday will be paid at time and one-half (1½) the hourly wage rate plus fringe benefits. All Millwright work performed in excess of the regular work day and on Saturday shall be compensated for at time and one-half (1½) the regular Millwright hourly wage rate plus fringe benefits. The regular work day starting 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 work accomplished on Sundays and recognized holidays, or days observed as recognized holidays, shall be compensated for at double (2) the regular hourly rate of wages plus fringe benefits. **NOTE:** All overtime is computed on the hourly wage rate plus an amount equal to the fringe benefits.

NO. 85: Means the work week shall be Monday through Sunday. Eight (8) hours shall constitute a day's work to begin between 6:00 a.m. and 9:00 a.m. and end between 2:30 p.m. to 5:30 p.m. Employees required to work during their lunch period shall receive the overtime rate. Employees shall receive time and one-half (1½) for all time they are required to work prior to their normal starting time or after eight (8) hours or normal quitting time Monday through Friday, or all day on Saturday. If an Employer has started the work week on a five day, eight hours a day schedule, and due to inclement weather misses any time, then he may switch to a nine or ten hours a day schedule, at straight time, for the remainder of that work week in order to make up for the lost time (10-hour make-up day). All work over ten (10) hours a day or over forty (40) hours a week must be paid at time & one-half (1½). Sundays and recognized holidays shall be paid at the double (2) time rate of pay. A contractor may alter the regular work week to four (4) ten (10) hour days at straight time rate of pay. To do this the scheduled 4-10's must be worked at least one full week and the regular workweek shall be Monday through Thursday with Friday being a make-up day at straight time for days missed in the regular workweek due to inclement weather. If 5-8's are being worked, Saturday may be used as a make-up day at straight time if inclement weather prevents work during the normal work week.

NO. 88: Means the regular work week shall consist of five (5) eight (8) hour days, 8:00 a.m. to 4:30 p.m., Monday through Friday, except when the work week is scheduled as a 4-10's week or as a week with start time advanced or delayed as described below. The starting time may be advanced or delayed by one hour on either side of 8:00 a.m. The advanced or delayed starting time must run for a period of at least five (5) days. The Employer may establish a work week consisting of four (4) days, during the regular work week, each day consisting of ten (10) hours at straight time. The 4-10's must run for a period of at least four (4) days. 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 (or ten hours in a 4-10's week), the first eight (8) hours of a Saturday, and it shall be at time and one-half (1½) for the Friday and Saturday following Thanksgiving. Double (2) time shall be paid for the following time worked on Sunday, New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day, as well as any work in excess of eight (8) hours on a Saturday and the Saturday of a three-day weekend (except the Saturday following Thanksgiving).

NO. 94: Means eight (8) hours shall constitute a days work between the hours of 8:00 a.m. and 5:00 p.m. 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 work performed in excess of the regular work day and on Saturday shall be compensated at one and one-half (1½) times the regular pay. In the event time is lost during the work week due to weather conditions, the Employer may schedule work on the following Saturday at straight time. All work accomplished on Sunday and holidays shall be compensated at double the regular rate of wages.

**BENTON COUNTY
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

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.

**BENTON COUNTY
HOLIDAY SCHEDULE – BUILDING CONSTRUCTION**

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. 3: All work done on New Year's Day, Decoration Day, July 4th, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day shall be paid at the double time rate of pay. Whenever any such holidays fall on a Sunday, the following Monday shall be observed as a holiday.

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. 5: All work that shall be done on New Year's Day, Memorial Day, Fourth of July, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day shall be paid at the double (2) time rate of pay.

NO. 7: All work done on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day shall be paid at the double time rate of pay. 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. 15: All work accomplished on the recognized holidays of New Year's Day, Decoration Day (Memorial Day), Independence Day (Fourth of July), Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day, or days observed as these named holidays, shall be compensated for at double (2) the regular hourly rate of wages plus fringe benefits. If a holiday falls on Saturday, it shall be observed on the preceding Friday. If a holiday falls on a Sunday, it shall be observed on the following Monday. No work shall be performed on Labor Day, Christmas Day, Decoration Day or Independence Day except to preserve life or property.

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 the holiday and all work performed on said day shall be at the double (2) time rate. When one of the holidays falls on Saturday, the preceding Friday shall be considered the holiday and all work performed on said day shall be at the double (2) time rate.

NO. 22: All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, or days locally observed as such, and Sunday shall be recognized as holidays. If a holiday falls on Saturday, Friday shall be observed; if it falls on Sunday, Monday shall be observed. All work performed on holidays shall be paid at the double (2) time rate of pay.

NO. 32: All work performed for the Friday and Saturday following Thanksgiving shall be paid at the time and one-half (1½) rate of pay. All work performed on Sundays, New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day shall be paid at the double (2) time rate of pay. When one of the above holidays falls on Sunday, the following Monday shall be observed and when one of the above holidays falls on Saturday, the preceding Friday shall be observed.

NO. 33: All work done on New Year's Day, Memorial Day, Fourth of July, Thanksgiving Day and Christmas Day shall be paid at the double time rate of pay. Labor Day shall be paid at the triple (3) time rate of pay. If the holiday falls on Sunday, the following Monday will be observed; if the holiday falls on Saturday, the preceding Friday will be observed.

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.

BENTON COUNTY
HOLIDAY SCHEDULE – BUILDING CONSTRUCTION

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. 72: All work performed on New Year's Day, Memorial Day (last Monday in May), Independence Day, Labor Day, Thanksgiving Day and Christmas Day shall be paid for at double (2) the regular straight time rate of pay. Any one of the above listed holidays falling on Sunday shall be observed on the following Monday and paid for at double (2) the regular straight time rate of pay, if worked. Any one of the above listed holidays falling on Saturday shall be observed on the prior Friday and paid for at double (2) the regular straight time rate of pay, if worked. No work shall be performed on Labor Day except in case of emergency.

OCCUPATIONAL TITLE	*Effective Date of Increase	Basic Hourly Rates	Over-Time Schedule	Holiday Schedule	Total Fringe Benefits
CARPENTER					
Journeymen	5/07	\$25.91	7	16	\$9.76
Millwright	5/07	\$25.91	7	16	\$9.76
Pile Driver Worker	5/07	\$25.91	7	16	\$9.76
OPERATING ENGINEER					
Group I	5/07	\$26.60	5	15	\$11.65
Group II	5/07	\$26.20	5	15	\$11.65
Group III	5/07	\$26.20	5	15	\$11.65
Group IV	5/07	\$24.20	5	15	\$11.65
Oiler-Driver	5/07	\$24.20	5	15	\$11.65
LABORER					
General Laborer	5/07	\$19.74	4	18	\$8.89
Skilled Laborer	5/07	\$20.29	4	18	\$8.89
TRUCK DRIVER - TEAMSTER					
Group I	5/07	\$24.72	12	3	\$8.35
Group II	5/07	\$24.88	12	3	\$8.35
Group III	5/07	\$24.87	12	3	\$8.35
Group IV	5/07	\$24.99	12	3	\$8.35

For the occupational titles not listed on the Heavy Construction Rate Sheet, use Rates shown on the Building Construction Rate Sheet.

**BENTON COUNTY
OVERTIME SCHEDULE – HEAVY CONSTRUCTION**

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.

**BENTON 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 (1½) 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.

REPLACEMENT PAGE

OUTSIDE ELECTRICIAN

These rates are to be used for the following counties:

Bates, Benton, Carroll, Cass, Clay, Henry, Jackson, Johnson, Lafayette, Pettis, Platte, Ray and Saline

COMMERCIAL WORK

Occupational Title	Basic	Total
	Hourly	Fringe
	Rate	Benefits
*Journeyman Lineman	\$35.14	\$4.75 + 34%
*Lineman Operator	\$32.79	\$4.75 + 34%
*Groundman	\$23.38	\$4.75 + 34%

UTILITY WORK

Occupational Title	Basic	Total
	Hourly	Fringe
	Rate	Benefits
*Journeyman Lineman	\$31.93	\$4.75 + 34%
*Lineman Operator	\$29.52	\$4.75 + 34%
*Groundman	\$20.58	\$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.

*Annual Incremental Increase