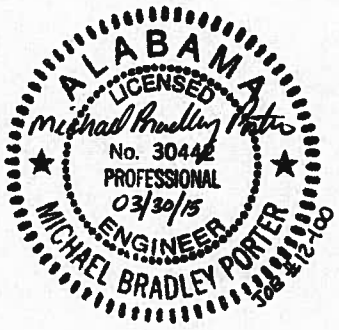
CITY OF TUSCALOOSA, ALABAMA

PUBLIC WORKS CONTRACT DOCUMENTS

WALTER MADDOX, MAYOR

CITY COUNCIL OF TUSCALOOSA

Council Members:



Phyllis Odom
Harrison Taylor
Cynthia Almond
Matthew Calderone
Kip Tyner
Edwin Pugh
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Glenda Webb, City Attorney

PROJECT: Alberta Revitalization Infrastructure Project Phase 1B

PROJECT NUMBER: A12-1324

FOR: Office of the City Engineer
(CITY DEPARTMENT)

(2015)



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STATE OF ALABAMA)
TUSCALOOSA COUNTY)
CITY OF TUSCALOOSA)

CITY OF TUSCALOOSA PUBLIC WORKS CONTRACT DOCUMENTS

SECTION ONE
ADVERTISEMENT AND NOTICE FOR BIDS
(2015)

Sealed bids will be received by the City of Tuscaloosa, Alabama, a Municipal Corporation, in the Narashino Room in the City Hall, 2201 University Boulevard, on the 27th day of April, 2015, until , 2:00 p.m., o'clock, local time, and then publicly opened and read for the furnishing of all labor and material (where required) and equipment for performing a public works project according to the plans, details, specifications and Contract Documents.

Award of the contract will be made within forty-five (45) calendar days from the date of the bid opening.

1. The Project:

A. The Project shall be known as **Alberta Revitalization Infrastructure Project Phase 1B (City Project No.:A12-1324)** and the general character of said public works project shall consist of the following:

Construction of roadway, private utility and City technology duct banks and wiring, street lighting, storm drainage, sanitary sewer, water distribution, landscaping, irrigation, and other improvements necessary for the completion of the above.

B. The approximate quantities of said Project are as follows: approximately 6000 sy of roadway, 12,000 lf of curb, 1800 lf of storm drainage (15" through 30"), 1200 lf of sanitary sewer, 1700 lf of water distribution, and multiple utility conduit ducts, light poles, landscaping, & irrigation.

C. Special instructions are as follows: **N/A**

D. The City will furnish the following: **N/A**

E. Time of Construction: From the date stated in the Notice to Proceed, the Project time of construction is **210** consecutive calendar days.

2. Plans and Specifications:

Plans and specifications and all related Contract Documents are open for public inspection at the office of Walker Associates, Inc., located at 917 22nd Avenue, Suite B, Tuscaloosa, Alabama, 35401, and plans, specifications and other elements of the contract documents may be obtained from the office of the Engineer Walker Associates, Inc., designated as the office of the awarding authority for this purpose, located at, 917 22nd Avenue, Suite B, Tuscaloosa, Alabama, 35401. The contact person for the project is Bradley Porter, P.E.. They can be reached at 205-561-3778 or bporter@walkercivil.com.

A. Plans, specifications and Contract Documents may be obtained at the above location upon the deposit of **$200.00**, which amount does not exceed twice the cost of printing, reproduction, handling and distribution of each set of such documents. Deposits by prime Contractor bidders are refundable in full upon return of all documents in reusable condition within ten (10) days of bid opening. Additional sets of bid documents for prime Contractor bidders, subcontractors, vendors or dealers may be obtained upon payment of the same deposit. Such deposits will be refunded, less the cost of printing, reproduction, handling and distribution, if all the documents are returned in reusable condition within ten (10) days of bid opening.

B. All eligible refunds of deposits for plans and specifications will be made by the City within twenty (20) days of bid opening.

3. Qualification of Bidders:

A. All bidders must be responsible, meeting the criteria and requirements set forth in the Instructions to Bidders and bid proposal.

B. Prequalification of Bidders IS NOT required.
If prequalification of bidders is indicated to be required by the preceding sentence, then written prequalification information is available for review at the same office where plans, specifications and Contract Documents are available.

C. The attention of all bidders is called to the provisions of State law governing "general Contractors," as set forth in Ala. Code §34-8-1, et seq. (1975), and rules and regulations promulgated pursuant thereto.

D. If a construction manager is being utilized and this contract is one of a multiple of trade contracts, then the bidder shall be fully licensed for the trade, as determined by applicable law.

E. The City may not enter into a contract with a non-resident corporation or entity which is not qualified under State law to do business in the State of Alabama.

F. All bidders shall possess all other licenses and/or permits required by applicable law, rule or regulation for the performance of the work.

G. All bidders must submit with their proposal, Contractor's license number and a copy of the license. State law, Ala. Code §34-8-8(b), requires all bids to be rejected which do not contain the General Contractor's current license number.

H. The City reserves the right to reject all bids and/or reject and rebid the Project should it determine the same is in the best interest of the City.

4. Construction Manager:

N/A If the preceding blank is marked with an affirmative indication, it means that this contract involves the use of a construction manager and this contract is one of several multiple trade and/or multiple prime contracts for work on the Project. Bidders attention is called to the supplemental conditions attached to the General Conditions of the Contract Documents regarding this topic.

5. Bid Bonds: Each bidder must submit with its bid a cashier's check drawn on an Alabama bank or a fully executed bid bond on the form that is contained in the Contract Documents executed by a surety company duly authorized and qualified to make bond in the State of Alabama. All bonds, sureties and/or cashier checks will be made payable to the City for an amount not less than 5 percent of the City's or its engineers or architects estimated cost of the Project or of the total bid in the proposal, but in no event more than $10,000.00.

6. Sales and Use Tax Savings: Alabama Department of Revenue Rule 810-6-3.69.02(2010) exempts certain payment of state, county, and municipal sales and use taxes by the contractor or subcontractor on tangible personal property to be incorporated into the realty pursuant to a contract with a municipal corporation such as the City of

Tuscaloosa. All tax exempt purchases shall be in accordance with the laws of this state and the Alabama Department of Revenue. It is the sole responsibility of the successful contractor to make the necessary inquiries and determinations as to what materials or items of tangible personal property to be incorporated into the project qualify as tax exempt in the opinion of the Alabama Department of Revenue. Unless otherwise noted, the project will be bid and administered in compliance with the State of Alabama Act 2013-205, Certificate of Exemption from Sales and Use Tax for Governmental Entities, regarding sales and use taxes. Sales and use taxes shall not be included in the bid. The Contractor shall be responsible for obtaining a certificate of exemption from the Alabama Department of Revenue for purchases of materials and other tangible property made part of the project. Any subcontractors purchasing materials or other tangible personal property as part of the project shall also be responsible for obtaining a certificate of exemption. The estimate sales and use tax saving must be accounted for on the bid proposal. Failure to provide the estimated sales and use tax savings may render the bid as non-responsive. Other than determining responsiveness of the bid, sales and use tax accounting shall not affect the bid pricing nor shall be considered in the determination of the lowest responsible and responsive bidder.

7. Pre-Bid Conference: A Pre-Bid Conference IS required for this Project. The Conference is MANDATORY and will be held at **10:00 a.m., Thursday, April 16th, 2015, in the City of Tuscaloosa City Hall Narashino Room**, Tuscaloosa, Alabama.

NOTE: **All bidders are advised to carefully read the Instructions to Bidders contained in the Contract Documents, which provisions and requirements are adopted herein by reference.**

CITY OF TUSCALOOSA, ALABAMA,
A MUNICIPAL CORPORATION
Walter Maddox, Mayor

[END ADVERTISEMENT FOR BID—OFFICE OF THE CITY ATTORNEY]

CITY OF TUSCALOOSA PUBLIC WORKS CONTRACT DOCUMENTS
SECTION TWO
INSTRUCTION TO BIDDERS
(2015)

***NOTE*: THIS DOCUMENT CONTAINS IMPORTANT BIDDING AND CONTRACTING INFORMATION. ALL POTENTIAL BIDDERS SHOULD READ IT THOROUGHLY**

1. Intention: The Advertisement for Bids, Instruction to Bidders, Contract Agreement, any modifications or supplemental conditions to the Contract Agreement, Bid Proposal, and the Plans and Specifications are interrelated and apply to the complete work to which they relate.

2. Definitions: Where the following words, or the pronouns used in their stead, occur herein, they shall have the following meaning:

"Awarding Authority" shall mean the City of Tuscaloosa, Alabama.

"Bidder" shall mean any person, firm or corporation, that is responsible, submitting a responsive bid for the Project contemplated by the contract documents, who meets the requirements set forth in the contract documents, maintains a permanent place of business, has adequate forces and equipment to perform the work on the Project properly and within the time limit that is established, has sufficient experience in the type work provided for in the contract documents and has adequate financial status and resources to meets its obligations contingent to the work.

"City" or "Owner" shall mean the City of Tuscaloosa, Alabama, as the awarding authority or its authorized and legal representatives.

"Construction Manager" shall mean that person or entity employed by the City to provide Construction Manager services on the work or Project, who shall be the City's representative on the Project.

"Contractor" shall mean initially the successful or probable low bidder and then the party of the first part to the construction agreement or the legally authorized representatives of such party, including a trade contractor.

"Engineer/Architect" shall mean an Engineer or Architect responsible for design and related services on the Project, and if no Construction Manager is employed, then the Engineer is the representative of the City of Tuscaloosa, Alabama, on the Project. References to the "Engineer" shall mean the Construction Manager, if the City has employed such services, to the extent such services are applicable to construction management activity as set forth in the agreement between the City and the Construction Manager, and the context herein indicates that it would relate to services traditionally and customarily performed by a Construction Manager; otherwise, "Engineer" shall refer to the Engineer or Architect.

"Force Account Work" work paid for by reimbursing for the actual cost for labor, materials and equipment usage incurred in the performance of the work, as directed, including a percentage for overhead and profit where appropriate.

"Gender": a word importing one gender shall if appropriate extend to and be applied to the other gender. The masculine shall include the feminine and vice versa, unless the context clearly indicates otherwise.

"Inspector" shall mean a representative of the Engineer/Architect, Construction Manager or the City, as the case may be.

"Non-Resident Contractor" shall mean a contractor which is neither (a) organized and existing under the laws of the State of Alabama nor (b) maintains its principal place of business in the State of Alabama. A non-resident contractor which has maintained a permanent branch office within the State of Alabama for at least five (5) continuous years shall not thereafter be deemed to be a non-resident contractor so long as the contractor continues to maintain a branch office within Alabama.

"Project" shall mean the Public Work to which these Contract Documents relate, including the labor, materials and all work to be done by Contractor that is the subject of the bid, plans, specifications and contract documents.

"Public Property" Real property which the awarding authority owns or has contractual right to own or purchase, including easements, rights-of-way, or otherwise.

"Public Work(s)" shall mean a Project consisting of the construction, repair, renovation, or maintenance of public buildings, structures, sewers, water works, roads, bridges, docks, underpasses and viaducts, as well as any other improvement to be constructed, repaired or renovated or maintained on public property to be paid, in whole or in part, with public funds or with financing to be retired with public funds in the form of lease payments or otherwise.

"Responsible Bidder" shall mean a bidder who, among other qualities determined necessary for performance, is competent, experienced and financially able to perform the contract.

"Responsive Bidder" shall mean a bidder who submits a bid that complies with the terms and conditions of the invitation for bids, including plans, drawings, specifications and other provisions of the contract documents.

"Retainage" shall mean that money belonging to the Contractor which has been retained by the awarding authority conditioned upon final completion and acceptance of all work in connection with the Project.

"Singular/Plural" the singular shall include the plural and vice versa, unless the context clearly indicates otherwise.

"Trade Contracts" "Trade contracts" or "multiple prime contracts" are multiple but separate contracts with the City on the same Project that represent significant construction activities performed concurrently with and closely coordinated with construction activities performed on the Project under other trade contracts.

"Unbalanced Bid" Unbalanced bids may be considered non-responsive and may be subject to rejection. An unbalanced bid includes but is not limited to one which results in a substantial advance payment to the contractor.

3. **Work to be Performed**: The City contemplates the construction of a public works project as generally described in the Advertisement for Bid and as more particularly described, shown and depicted on the plans, specifications, drawings and in the contract documents.

4. **Bidding, Generally:**

A. All bids must be made upon the bid proposal forms contained in the contract documents, shall state the amount bid for each item as shown therein and all blanks shall be properly filled in and bid proposal executed as required.

B. Any bidder may withdraw his or its bid, either personally or by telegraphic or written request (not by facsimile), at any time prior to the scheduled opening time for receipt of bids. Except as provided in

Ala. Code §39-2-11(b)(c)(d), no bid may be withdrawn after opening of bids prior to the time of returning bid bonds as provided for herein.

C. Any unauthorized conditions, limitations or provisos attached to the bid proposal, except as otherwise provided herein, will render a bid proposal informal and may cause its rejection. Unbalanced bids may be subject to rejection. Bids without the General Contractor's license number and a copy of the license will be rejected.

D. All bids will be opened in public at the time and date specified in the Notice of Advertisement for bids, unless otherwise altered by addendum. All bidders are invited to be present at the opening of bids. No bids will be received after the time established for the opening of bids.

E. All bids are to be enclosed in a sealed envelope addressed to the City of Tuscaloosa, P. O. Box 2089, Tuscaloosa, Alabama and/or hand delivered to the City Clerk, 2201 University Boulevard, City Hall, Tuscaloosa, Alabama. All bids are to be marked to indicate clearly the Project to which it applies and include the following language: "Bid Enclosed" and "Attention City Clerk."

NOTE: Bidders current General Contractor's license number must be displayed on the bid and the sealed envelope.

5. **Responsible, responsive bidders:** The City reserves the right to reject any bid that is submitted by a bidder that is determined by the City to not be a responsible bidder or whose bid proposal is not responsive.

In determining whether a bidder or bid is responsible and/or responsive, the City reserves the right to also request and consider the following factors:

A. Types or kinds of materials or items best suited to the City's needs for the Project.
B. A current financial statement of the bidder and/ or bonding capability or limits.
C. An accurate inventory of equipment to be used on the Project for a list of key personnel to be used on the Project and detailed histories of their experience.
D. A list of similar work performed by any person, firm, or corporation with the same name as the name or any of the names in the bidder's proposal within the last five (5) years.
E. A list of five (5) references familiar with the bidder's competence, experience, capabilities, skill and integrity.
F. A statement of bidder pertaining to bankruptcies, judgments, liens or litigation within the last five (5) years. Such statement shall also apply to each company, officer and the key personnel on the Project.
G. The General Contractor's State license number and class.
H. Bidder's performance and prosecution of past projects for the City.
I. An unbalanced bid.
J. Other information supplied in the bid proposal.

The City may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the City all such information and data for this purpose as the City may request. The City reserves the right to reject any Proposal if the evidence submitted by, or investigation of, such Bidder fails to satisfy the City that such Bidder is properly qualified to carry out the obligations of the Contract and complete the work contemplated therein.

6. **Bid Bonds:** Each bidder must submit with its bid, a cashiers check drawn on an Alabama bank, made payable to the City of Tuscaloosa or a fully executed bid bond on the form that is contained in the contract documents, executed by a surety company duly authorized and qualified to make bond in the State of Alabama. All bonds and/or cashiers check will be made payable to the City of Tuscaloosa for an amount not less than five (5) percent of the City's or its engineers or architects estimated cost of the Project or of the total bid in the proposal, but in no event more than $10,000.00. The purpose of said bid bond is to insure that the successful bidder will enter into

a written contract with the City for the Project on the form included in the contract documents and furnish a performance bond and payment bond executed by a surety company duly authorized and qualified to make such bond in the State of Alabama, in the amount required and provide evidence of insurance as required by the bid documents within time specified or if no time is specified, within thirty (30) days after the forms have been presented to the successful bidder for signature. Provided; however, if extenuating circumstances prevail, the City may grant an extension of time not exceeding five (5) days for the return of the contract bonds and evidence of insurance.

The price or cost of all items bid shall remain in effect for a period of fifty (50) days after Notice of Award.

7. **Return of Bid Bonds:** All bid bonds, except those of the three lowest bona fide bidders, will be returned immediately after bids have been checked, tabulated and the relation of the bids established. The bid bonds of the three lowest bidders may be retained and if so will be returned as soon as the contract bonds and the contract documents of the successful bidder have been approved and properly executed.

In the event it is necessary to defer a contract award for longer than fifteen (15) days, after opening of bids, then all bid bonds, except that of the potential successful bidders will be returned.

Award of the contract will be made within the time specified after the opening of bids. In the event no award is made within such time, all bids may be rejected and all bonds returned.

Provided; however, the potentially successful bidder may enter into a written agreement with the City for an extension of time for consideration of its bid, in which case, the bidder's bond shall remain in full force and effect or the City may permit said bidder to substitute a satisfactory surety for the cashier's check if submitted as a guaranty to the bid bond.

8. **Forfeiture of Bid Bonds:** Should the successful bidder or bidders to whom a contract is awarded fail to execute a contract(s) and furnish acceptable contract securities and evidence of insurance, as required, within thirty (30) days after the prescribed forms have been presented to him/her, the City may retain from the proposal guaranty, if it is a cashier's check or recovered from the principal or the sureties, if the guaranty is a bid bond, the difference between the amount of the contract as awarded, and the amount of the proposals of the new lowest bidder. If no other bids are received, the full amount of the proposal guaranty may be so retained and recovered as liquidated damages for such default. Any sum so retained or recovered shall be the property of the awarding authority.

9. **Consideration of Bid Proposals:**

A. Generally: The contract will be awarded to the lowest responsible and responsive bidder, unless the City determines that all the bids are unreasonable or that it is not in the best interest of the City to accept any of the bids. Award of the contract will be made on the basis of the lowest actual bid amount for the contract, which is defined as the total of the bid and/or extended total amounts for unit price items, plus requested and accepted additive or deductive alternates, pursuant to the provisions hereof. The City reserves the right to reject all bids and/or reject and rebid the Project should it determine the same is in the best interest of the City.

B. Minor irregularities as determined by the City or its representatives, will not cause a bid to be non-responsive and may be waived by the City.

C. Bidder must posses all licenses and permits required by applicable law, rule or regulation for the performance of the work prior to bidding.

D. Where the City elects to prequalify contractors prior to bidding, it shall be understood that such prequalification may be general in nature and shall not limit the City's right to revoke such prequalification pursuant to Ala. Code §39-2-4(d) (1975).

E. Joint ventures shall not generally be considered acceptable bids without special waiver from the City, which must be requested in writing at least thirty (30) days prior to bid opening.

F. Additive and/or Deductive Alternates: If the City has elected to request bids for additive and/or deductive alternates, then the following procedure shall be the basis for calculating such bids:

1) Deductive Alternates: Any deductive alternate from the base bid shall constitute cumulative deductions from the base bid; and in determining the lowest bidder, if the City elects to consider any deductive alternates, the City will proceed to consider the bids upon the basis of the base bids of all qualified bidders minus the respective deduction stated for the first alternate. If the City determines that it wishes to proceed to consider additional deductive alternates, it may do so sequentially and in like manner throughout the deductive alternates the City elects, so that the base bids of all qualified bidders shall be calculated minus the respective number of deductive alternates in sequence the City has elected to consider. The lowest responsible responsive bid will be the lowest actual base bid of a qualified bidder less the selected sequential deductive alternates.

2) Additive Alternates: To determine additive alternates, any additive alternate shall constitute cumulative additions to the base bid; and in determining the lowest bidder if the City elects to consider any additive alternates, the City will proceed to consider the bids upon the basis of the base bid of all bidders plus the respective addition stated for the first alternate. If the City determines that it wishes to proceed to consider additional additive alternates it may do so sequentially, and in like manner, throughout the additive alternates, the City elects, so that the base bids of all qualified bidders shall be calculated plus the respective number of additive alternates in sequence the City has elected to consider. The lowest responsible responsive bid will be the lowest actual base bid of a qualified bidder plus the selected sequential additive alternates. Once the City has determined the lowest responsible responsive bidder as set forth herein, then it may award the contract on the basis of accepting and/or rejecting any additive and/or deductive alternates of that bid as it determines is in the best interest of the City.

G. No Bids or Only One Bid: In the event no bid proposals or only one bid proposal is received in response to the City's Advertisement for Bids at the time stated for the opening of bids, the City may elect at its discretion, any of the following options:

1) Advertise for and seek other competitive bids.
2) Direct that the work shall be done by force account under its direction and control.
3) Negotiate for the work through the receipt of informal bids. Provided; however, where only one responsible and responsive bid has been received, any negotiation for the work shall be for a price lower than that bid.

H. An unbalanced bid.

10. Materials and Work: All materials, which the engineering plans specify or are required, will be installed as they are shown on the drawings, plans and/or specs.

A. Brand names, catalog numbers, weights, etc., are used to indicate levels of quality only and are not intended to restrict the bidding. If bidding on an item of another brand or manufacturer than that specified, bidder's proposal should be accompanied by brochures or other pertinent literature giving detailed specifications of the item(s) on which the proposal is being made. Bids or proposals received without sufficient literature to determine equal quality may not be considered. Final determination as to equal quality will be made by the City.

B. Quantities: The quantities shown in the proposal shall be considered by the contractor as the quantities required to complete the work for the purpose of bidding. Should the actual quantities required in the construction of the work be greater or less than the quantities shown, an amount equal

to the difference of quantities at the unit prices bid for the items will be added to or deducted from the contract total.

C. Adjustment Items: During the course of work, the prices bid for adjustment items may be used by the City to increase or decrease the total cost for the work if the quantity of work exceeds or is less than the amount shown on plans.

D. The attention of all bidders is called to the fact that all or a portion of this Project may be federally funded and if so, the special conditions of a federally funded contract including federal labor standard provisions, the minimum wage rates included in the contract documents, plans and specifications must be followed.

E. Construction Crews: The Contractor will be required to furnish at least one separate construction crew during the work as set forth in the contract. Unless waived by the City, the Contractor shall perform on the sites and with his own organization and equipment, at least fifty percent of the total amount of the work to be performed under this Contract. The Contractor may only subcontract a maximum of fifty (50%) percent of the work without City consent. If, during the progress of the work hereunder, the Contractor requests a reduction of such percentage, and the City representative determines that it would be to the City's advantage, the percentage of the labor required to be performed by the Contractor's own organization may be reduced; PROVIDED prior written approval of such reduction is obtained by the Contractor from the City.

NOTE: Bidders are advised to carefully review all other elements of the contract documents for more details concerning requirements for performing work on the Project.

F. In the event the City elects to utilize a Purchasing Agent Appointment agreement in conjunction with this contract, the Contractor will be required to execute such an agreement and perform in accordance therewith.

11. Execution of Contract, Notice to Proceed: Award of the contract will be made within the time specified after the opening of bids.

The bidder to whom award is made shall enter into a written contract for the Project with the City on the forms provided in the contract documents, furnish the required performance and labor and material bonds with proper surety and furnish the evidence of insurance as required, all within thirty (30) days of presentation of the prescribed forms to the bidder. If extenuating circumstances prevail, the City may grant an extension of time not exceeding five (5) days for the return of the contract, required bonds and evidence of insurance.

Within twenty (20) days after presentation by the bidder to the City, the City shall review the bonds, surety and evidence of insurance to ascertain whether they meet the requirements of the contract documents, and if such requirements have been met the City shall complete the execution of the contract.

A notice to proceed order will be issued by the City or its representatives within fifteen (15) days after final execution of the contract by the City. The Contractor shall begin work on the date specified in the Notice to Proceed.

12. Labor, Material and Performance Bonds: Within thirty (30) days after the prescribed forms have been presented, the successful bidder shall execute a performance bond with good and sufficient surety from a company duly authorized and qualified to make such bond in the State of Alabama, a performance bond made payable to the City of Tuscaloosa, with a penalty equal to 100 percent of the amount of the contract price and in addition thereto, another bond with good and sufficient surety by a surety company duly authorized and qualified to make such bond in the State of Alabama, payable to the City of Tuscaloosa, in an amount equal to 100 percent of the contract price with an obligation that such contractor shall promptly make payments to all persons supplying it or them with labor, materials or supplies for or in prosecution of the Project provided for in such contract and for the payment of reasonable attorneys fees incurred by any successful claimants or plaintiffs in civil actions on said bond, pursuant to the provisions of Ala. Code §39-1-1 (1975).

13. **Surety and Insurer Qualifications:** All certificates of insurance and bonds (furnished in connection with the work to be performed under this contract) shall be countersigned by a licensed agent residing and engaged in doing business in the State of Alabama. The surety and insurer shall be licensed and authorized to do business in the State of Alabama. The surety companies on bonds shall be rated A- or better by A. M. BEST and listed on the United States Treasury Department 570 list.

14. **Power-of-Attorney:** The attorney-in-fact (resident agent) who executes the performance bond and/or payment bond on behalf of the surety must attach a notarized copy of his or her power-of-attorney as evidence of his authority to bind the surety of the date of execution of the bonds. Certification by a resident agent authorized to do business in Alabama is required.

15. **Insurance:** The successful contractor shall file with the City, at the time of delivery of the signed contract, satisfactory evidence of insurance, the requirements as set forth in the contract agreement. Satisfactory evidence of insurance shall include at a minimum, the insurers standard "Certificate of Insurance" (modified pursuant to insurance requirements of the contract agreement) and the agents verification of insurance as required by Section 26. If the City deems that additional evidence or clarification, etc., of insurance is appropriate, the bidder shall promptly furnish the same to the City upon request.

16. **Examination of Contract Documents and of the Site of the Project:** Before submitting a bid proposal for the Project, each bidder shall carefully examine the Contract Documents, including but not limited to plans, drawings, specifications, contract, etc., visit the site, and satisfy itself as to the nature and location of the Project, and the general and local conditions, including weather, the general character of the site or building, the character and extent of existing work within or adjacent to the site, any other work being performed or proposed thereon at the time of submission of their bids. It shall obtain full knowledge as to transportation, disposal, handling, and storage of materials, availability of water, electric power, and all other facilities in the area which will have a bearing on the performance of the Project for which they submit their proposals. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and visit and has judged for and satisfied himself as to conditions to be encountered regarding the character, difficulties, quality, and quantities of work to be performed and the material and equipment to be furnished, and as to the contract requirements and contingencies involved. It shall be the Bidder's obligation to verify for himself and to his complete satisfaction, all information concerning site and surface conditions.

17. **Subsurface Reports:** Prior to Bid opening, the City will make available to prospective Bidders, upon request, any information that it may have as to subsurface conditions and surface topography at the work site. Investigations of subsurface conditions were made for the purpose of study and design, and neither the City nor its consultants that performed such testing assume any responsibility whatsoever in respect to the sufficiency or accuracy of borings, or of the logs of test borings, or of other investigations that have been made, or of the interpretations made thereof, and there is no warranty or guarantee, either expressed or implied, that the conditions indicated by such investigations are representative of those existing throughout such area, or any part thereof, or that unforeseen developments may not occur.

- Logs of test borings, geotechnical reports, or topographic maps showing a record of the data obtained by the investigations of surface and subsurface conditions that are made available shall not be considered a part of the Contract Documents, and are available only for the convenience of the Bidders. Such logs and reports represent only the opinion of the Engineer/Architect or Consultant as to the character of the materials encountered by him in his investigations of the test borings.

Information derived from inspection of logs of test borings, or pits, geotechnical reports, topographic maps, or from Drawings showing location of utilities and structures will not in any way relieve the Contractor from any risk,

or from properly examining the site and making such additional investigations as he may elect, or from properly fulfilling all the terms of the Contract Documents.

The City shall not be responsible for any interpretations or conclusions drawn from any subsurface exploration reports or borings. Each bidder is to base his bid upon his determination of the subsurface conditions and of the types and quantities or material to be encountered or needed. Additional tests or other exploratory operations may be made at no cost to the City.

18. Interpretation of Plans and Specifications: If any bidder contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of plans, specifications, or other proposed contract documents, he may submit to the Engineer/Architect or Construction Manager, as the case may be, a written request for an interpretation thereof at least ten (10) days prior to bid opening. The bidder submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by written addendum duly issued and a copy of such addendum will be mailed or delivered to each person receiving a set of such documents. The City, Construction Manager or Engineer/Architect will not be responsible for any other explanations or interpretations of the proposed documents.

19. General Contractor's Permit or License: The attention of all bidders is called to the provisions of the State law governing general contractors as set forth in Ala. Code §34-8-1 et seq. (1975), particularly in regard to the need for and evidence of a State general contractor's license. The provisions of said statute are adopted herein by reference and form a part of the Contract with the selected bidder should this Project be awarded.

Bidders are reminded that they will be governed by said statutes insofar as they are applicable. To summarize the above quoted statutes, Ala. Code §34-8-1, et seq. (1975) provides that no one is entitled to bid and no contract may be awarded to anyone who does not possess a valid general contractor's permit or license, including specialty classifications for the work, as provided by the foregoing sections of the State Code, and rules and regulations promulgated pursuant thereto and that said bid may not be considered without evidence being produced that he is so qualified. Trade contractors must be duly licensed in accordance with applicable law. The City may not enter into a contract with a nonresident corporation that is not qualified under the State law to do business in Alabama.

Bidder MUST include with proposal contractor's current license number and a copy of the license. State law, Ala. Code §34-8-8(b) (1975) requires all bids to be rejected which do not contain general contractor's license number.

20. U. S. Products Preference: The successful bidder (contractor) shall comply with Ala. Code §39-3-1 (1975), shall agree to utilize in the execution of the Project, materials, supplies and products manufactured, mined, processed or otherwise produced in the United States or its territories, if the same are available at reasonable and competitive prices and not contrary to any sole source specifications. It is further stipulated that a breach of the foregoing provision of this agreement by the contractor in failing to utilize domestic products shall result in a downward adjustment in the contract price equal to any realized savings or benefit to the Contractor.

21. Use of Domestic Steel: The attention of all bidders and that of the successful bidder (contractor) is drawn to Ala. Code §39-3-4 (1975), requiring the use of steel produced within the United States for municipal construction projects when specifications in the construction contract require the use of steel and do not limit its supply to a sole source. This provision is subject to waiver if the procurement of domestic steel products becomes impractical as a result of national emergency, national strike or other causes. Violations of the use of domestic steel requirements shall result in a downward adjustment in the contract price to equal any savings or benefit to the Contractor.

22. **In State Bidder Preference:** Pursuant to Ala. Code §39-3-5 (1975), in the letting of public contracts in which municipal funds are utilized, except those contracts funded in whole or in part with funds received from a federal agency, preference shall be given to resident contractors, and a nonresident bidder domiciled in a state having laws granting preference to local contractors shall be awarded Alabama public contracts only on the same basis as the nonresident bidders' state awards contracts to Alabama contractors bidding under similar circumstances; and resident contractors in Alabama, as defined in Ala. Code §39-2-12 (1975), be they corporate, individuals or partnerships, are to be granted preference over non residents in awarding of contracts in the same manner and to the same extent as provided by the laws of the state of the domicile of the nonresident.

Nonresident bidders must accompany any written bid documents with a written opinion of an attorney-at-law licensed to practice law in such nonresident bidder's state of domicile, as to the preferences, if any or none, granted by the law of that state to its own business entities whose principal places of business are in that state in the letting of a public contract.

23. **Applicable Laws:** Each Bidder shall inform himself of, and the Bidder awarded a contract shall comply with, federal, state, and local laws, statutes, and ordinances relative to the execution of the work. This requirement includes, but is not limited to, applicable regulations concerning minimum wage rates, the use of domestic products, U.S. steel and resident labor, non-discrimination in the employment of labor, protection of public and employee safety and health, environmental protection, the protection of natural resources, fire protection, burning and non-burning requirements, permits, fees and similar subjects. Certain statutory requirements are summarized immediately hereinafter. The attention of all bidders is called to the fact that the work will be subject to compliance with all applicable City building and technical codes and will be subject, in addition to all other inspections, to inspection by a representative of the City of Tuscaloosa Building Inspections Department.

24. **SRF/DWSRF Special Requirements.** If all or any portion of the Project to which this contract applies is funded in whole or in part by the proceeds of a loan or loans from the Alabama Department of Environmental Management (ADEM) through either a State Revolving Fund for Wastewater or Water (SRF or DWSRF, respectively), additional requirements for the Contractor exist (Requirements). These Requirements relate to Project objectives for utilization of Minority Business Enterprises/Women Business Enterprises (MBE/WBE). The Contractor must document efforts made to utilize MBE/WBE firms and submit to ADEM, with a copy to the City within ten (10) days after contract execution, evidence of the positive steps in accordance with the requirements to utilize small minority and women businesses in the procurement of subcontracts.

Other Requirements relate to Federal Labor Standards, Title VI of the Civil Rights Act of 1964, Equal Employment Opportunity, Affirmative Action Equal Opportunity Clause, Goals and Timetables, compliance with Occupational Safety and Health Act of 1970 and Section 107 of Contract Work Hours and Safety Standards Act (PL91-54) which are adopted herein by reference to the extent applicable.

For DWSRF and SRF funded projects, special requirements are also set forth in Supplemental General Conditions. If not attached to the contract documents, Contractors should contact the City representative and/or the City's consulting engineer for a copy of all special requirements and conditions.

25. **Special Conditions for Federally Funded Contracts.** If all or any portion of the Project to which this contract applies is funded in whole or in part by the proceeds of a grant from an agency of the United States Government, additional requirements for the Contractor exist. A summary of these requirements entitled, "Special Conditions for Federally funded Contracts," is attached hereto and made a part hereof. Bidder should contact the Engineer or City Representative to confirm the applicability of these requirements to the Project.

26. Agent's Verification of Insurance. This form or a letter equivalent from the Insurance Agent should be submitted with each Contractor's Bid, or in the alternative, Contractor may provide a copy of the insurance policy or policies reflecting the coverages required herein.

27. Compliance with Immigration Law. By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom, to the extent allowed by Federal law.

28. Compliance with Affordable Health Care Act. By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal compliance laws pertaining to the Affordable Health Care Act. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom, to the extent allowed by Federal law.

29. Compliance with the City of Tuscaloosa Minority Enterprise / Disadvantage Business Enterprise (MBE/DBE/WBE) Policy for Public Works Projects Over $50,000. The City of Tuscaloosa has voluntarily adopted a Minority / Disadvantaged Business Enterprise ("MBE/DBE/WBE") Program designed to encourage the participation and development of minority and disadvantaged business enterprises and to promote equal business opportunities to the fullest extent allowed by state and federal law.

It is the intent of the City to foster competition among contractors, suppliers, and vendors that will result in better quality and more economical services rendered to the City. Under this policy, the City of Tuscaloosa has established a goal of ten to twenty percent (10-20%) inclusion of minority and disadvantaged business enterprises for all services required to deliver City projects. In no case shall the stated percentage be the determining factor in contract awards. Rather, contractors must demonstrate a good faith effort to attain the desired percentage goal.

The Policy as adopted is entitled THE CITY OF TUSCALOOSA MINORITY ENTERPRISE / DISADVANTAGED BUSINESS ENTERPRISE (MBE/DBE/WBE) POLICY FOR PUBLIC WORKS PROJECTS OVER $50,000, and is attached hereto as "Exhibit A" (the "Policy"). Contractors are encouraged read the Policy in its entirety, and must follow the instructions contained therein. **The Policy requires submission of various forms at specified times, and failure to do so may result in rejection of bid due to non-responsiveness.** Contractors shall work in coordination with the City of Tuscaloosa's Recovery Department.

Recovery Department contact information is as follows:
Robin Edgeworth, Director of Recovery Operations
Telephone: (205) 248-5725
redgeworth@tuscaloosa.com.

Questions about Policy requirements should be directed to the City of Tuscaloosa Office of the City Attorney at 205-248-5140.

[END INSTRUCTION TO BIDDERS—OFFICE OF THE CITY ATTORNEY]

CITY OF TUSCALOOSA PUBLIC WORKS
SECTION THREE

PROPOSAL (BID)

(2015)

NOTE TO BIDDER: Use BLACK ink for completing this Proposal form.

To: THE CITY OF TUSCALOOSA, ALABAMA

Address: P.O. BOX 2089
TUSCALOOSA, AL 35403

Project Title: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B

Project No.: A12-1324

Trade: The trade portion of the work for which this Proposal is submitted is:
SITEWORK, DEMOLITION & UTILITIES (if applicable)

Trade Package No.: _____

BIDDER: The name of the Bidder submitting this Proposal is RYAN SHIRLEY, INC., doing business at 6425 5TH STREET (Street), NORTHPORT (City), AL (State), 35476 (Zip) which is the address to which all communications concerned with this Proposal and with the Contract shall be sent.

Licensed, Class CIVIL, Alabama General Contractor No.: 20976 (Attach Copy)

Alabama General Contractor Specialty CIVIL CONSTRUCTION

Alabama General Contractor License Major Categories:

(1) HS; HIGHWAYS & STREETS (2) MU-S; SEWER PROJECTS

Bidder's contact person for additional information on this Proposal:

Name: RYAN SHIRLEY **Telephone:** 205-330-1803

ADDENDA: The Bidder hereby acknowledges that he has received Addenda No's. 1, 2, 3, 4 (Bidder shall insert No. of each Addendum received) and agrees that all addenda issued are hereby made part of the Contract Documents, and the Bidder further agrees that his Proposal(s) includes all impacts resulting from said addenda.

LUMP SUM: The Bidder agrees to accept as full payment of the work proposed under this Project, as services are rendered, as herein specified and as shown on the Contract Documents, upon the undersigned's own estimate of quantities and costs, the following lump sum of: N/A – UNIT PRICE CONTRACT
Dollars and _____ cents ($_____). *(Amount written in words has precedence)*

ALTERNATES: Attach additional sheets for additive or deductive alternates, if in contract documents.

UNIT PRICES: Where the Project is bid in unit prices then Bidder agrees to perform the work in the stated quantities of the materials at the unit prices so bid, the cumulative total of which constitutes the base bid set forth below, and to accept as final payment for the work performed under this Project as herein specified the extension of each such unit price for the quantities actually installed in accordance with the following or attached unit price schedule.

An unbalanced bid, as herein defined, may be considered non-responsive. A bid resulting in a substantial advance payment on an item that is for a single lump sum payment may be considered non responsive.

Prices for mobilization and demobilization combined shall not exceed 5% of the total base bid unless a reasonable explanation is provided in writing with the bid and accepted by the Owner. Lump sum payments and unit price bids for a single or lump sum payment may be spread over the course of the period of work until the line item is complete at owner's option.

The Bidder's unit price for materials listed is as including the payment of taxes (See Page 3) where applicable: (See attached Unit Price Bid Schedule)

SALES AND USE TAX SAVINGS ACCOUNTING:

Pursuant to State of Alabama Act 2013-205, Section 1(g) the Contractor accounts for the sales tax NOT included in the bid proposal form as follows:

ESTIMATED SALES AND USE TAX

BASE BID: $ $73,552 ℮

Additive Alternate (if applicable): $ $14,078 ℮

Failure to provide an accounting of sales tax may render the bid non-responsive. Other than determining responsiveness, sales tax accounting shall not affect the bid pricing nor be considered in the determination of the lowest responsible and responsive bidder.

AS BUILT DRAWINGS: The Bidder's Proposal contains $ 100 ℮ for "as built drawings."

BIDDER'S DECLARATION AND UNDERSTANDING: The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this Proposal are those named herein, that this Proposal is, in all respects, fair and without fraud, that it is made without collusion with any official of the City, and that the Proposal is made without any connection or collusion with any person submitting another Proposal on this Contract.

The Bidder further agrees that he has checked and verified the completeness of the Contract Documents and that he has exercised his own judgment regarding the interpretation of subsurface information utilizing all pertinent data in arriving at his conclusions. The Bidder shall be fully responsible for any damages or liability arising out of his or his subcontractors prebid investigations.

The Bidder understands and agrees that if a Contract is awarded, the City may elect to award all schedules under one Contract, lump sum, separately, or in any combination that best serves the interests of the City.

The Bidder further declares that he has carefully examined the Contract documents for the construction of the Project and has checked and verified the completeness of the Contract Documents, that he has personally

inspected the site, that he has satisfied himself as to the quantities involved, including materials and equipment, and conditions of work involved. Bidder further declares that he is fully aware of the fact that the description of the work, quantities of work and materials, as included herein, is brief and is intended only to indicate the general nature of the work and to identify the said quantities with the detailed requirements of the Contract Documents. Bidder also declares that this Proposal is made according to the provisions and under the terms of the Contract Documents, which Documents are hereby made a part of this Proposal.

The Bidder declares that he understands and agrees that the quantities shown in the Advertisement for Bids and in the Proposal are approximate only and are subject to either increase or decrease; and that should quantities be decreased, he also understands and agrees that payment will be made on actual quantities installed at the unit bid prices, and will make no claim for anticipated profits for any decreases in the quantities. Actual quantities will be determined upon completion of the work.

START OF CONSTRUCTION AND CONTRACT COMPLETION TIME: The Bidder further agrees to begin work on the date stated in the Notice to Proceed and to fully complete the work, in all respects, within the time specified in the contract documents for completion.

EXPERIENCE OF BIDDER: Unless advised by the awarding authority in the Advertisement for Bids that the same is not required, the Bidder submits the following list of at least three clients for whom projects involving construction of similar projects have been performed within the past 5 years.

1. VIZOR, LLC — Name of Client — 765-807-2733 — Telephone Number
   201 MAIN STREET, SUITE 1000 — Street — LAFAYETTE, IN 47901 — City
   THE COLLEGIATE - TUSCALOOSA — Facility — 3.8 MILLION — Size — APRIL 2014 - PRESENT — Date
   JOHN CAMERON / ALMON — Name of Engineer/Architect /Engineering Firm — 205-349-2100 — Telephone Number

2. GRANITE CAPITAL, LLC — Name of Client — 205-886-3713 — Telephone Number
   PO BOX 3172 — Street — TUSCALOOSA, AL — City
   THE MOUNT - TUSCALOOSA — Facility — 1.3 MILLION — Size — JANUARY 2014 - PRESENT — Date
   JIMMY DUNCAN / McGIFFERT — Name of Engineer/Architect /Engineering Firm — 205-759-1521 — Telephone Number

3. CITY OF TUSCALOOSA — Name of Client — 205-248-5360 — Telephone Number
   2201 UNIVERSITY BLVD. — Street — TUSCALOOSA, AL — City
   JAMES HARRISON PARKWAY IMPROVEMENTS — Facility — 1.7 MILLION — Size — MAY 2013 - OCTOBER 2013 — Date
   MIKE GARDINER / McGIFFERT — Name of Engineer/Architect/Engineering Firm — 205-759-1521 — Telephone Number

PERFORMANCE OF WORK BY CONTRACTOR: The Bidder shall perform at least 50 percent of the work with his own forces (refer to the INSTRUCTIONS TO BIDDERS).

SUBCONTRACTORS: Unless the same information has been provided in the prequalification statement, the Bidder further certifies that if his bid is accepted, the following subcontracting firms or businesses will be awarded subcontracts for the following portions of the work:

Description of Work ASPHALT PAVING

ST BUNN CONSTRUCTION COMPANY, INC.
Name

1904 UNIVERSITY BLVD., TUSCALOOSA, AL, 35401
Street City State Zip

Description of Work SITE CONCRETE

McCOOL CONCRETE CONTRACTORS
Name

1628 BEAR CREEK ROAD, DUNCANVILLE, AL, 35456
Street City State Zip

Description of Work SITE ELECTRICAL

PREMIER ELECTRIC
Name

1201 15TH STREET, TUSCALOOSA, AL, 35406
Street City State Zip

Description of Work LANDSCAPING & IRRIGATION

GUTHRIE LANDSCAPE SERVICES
Name

PO BOX 21270, TUSCALOOSA, AL, 35402
Street City State Zip

SURETY: If the Bidder is awarded a construction contract on this Proposal, the Surety who provides the Performance Bond and Payment Bond will be:

WESTERN SURETY COMPANY whose address is

101 SOUTH REID STREET, SIOUX FALLS, SD, 57103
Street City State Zip

Single Job Bond Limit UNLIMITED Aggregate Job Bond Limit UNLIMITED

If Sole Proprietor or Partnership:

IN WITNESS hereto the undersigned has set his (its) hand this _____ day of _____, 20___.

_____
Signature of Bidder

_____
Title

If Corporation:

IN WITNESS WHEREOF the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers, this 28 day of APRIL, 20 15.

RYAN SHIRLEY, INC
Name of Corporation

By _____

(seal)

PRESIDENT
Title

Attest Karen Kelly
Secretary

****

The Bidder declares that he understands and agrees that the quantities shown in the Advertisement for Bids and in the Proposal are approximate only and are subject to either increase or decrease; and that should quantities be decreased, he also understands and agrees that payment will be made on actual quantities installed at the unit bid prices, and will make no claim for anticipated profits for any decreases in the quantities. Actual quantities will be determined upon completion of the work.

Attached hereto is a (Bid Bond) or (Check) for the sum of 5% BID AMOUNT ; NTE $10,000 according to the conditions under "Instructions to Bidders" and provisions therein.

Dated this 28 day of APRIL, 20 15.

BY: _____

PRESIDENT
Title

(NOTE) If the Bidder is a corporation, the Proposal shall be signed by an officer of the corporation; if a partnership it shall be signed by a partner. If signed by others, authority for signature shall be attached.

[END OF BID PROPOSAL—OFFICE OF THE CITY ATTORNEY]

City of Tuscaloosa
Alberta Revitalization Infrastructure Project

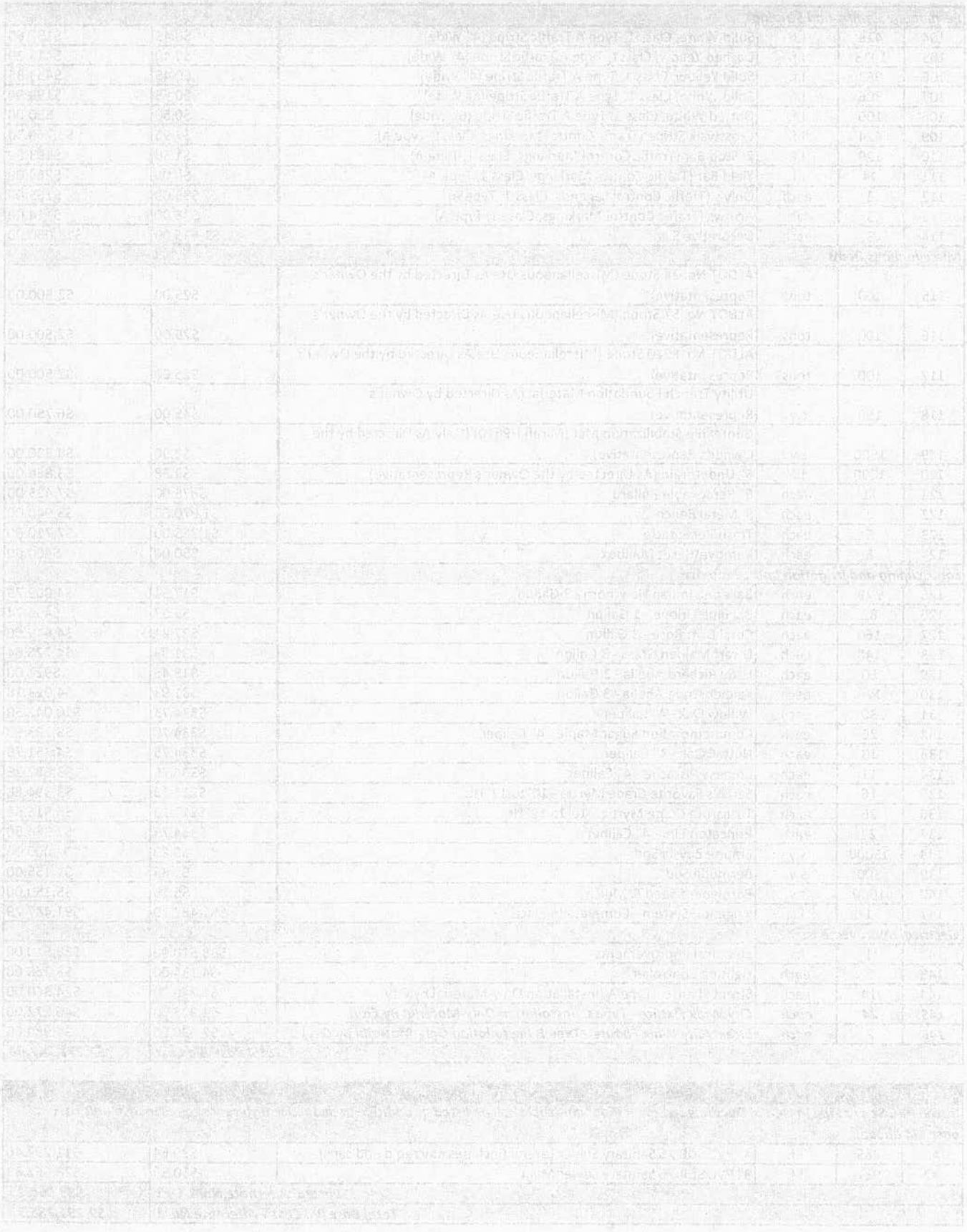
Phase 1B
Bid Schedule
4/27/15 (Addendum No. 4)

Item No.	Quantity	Unit	Description	Unit Cost	Total Cost
PROJECT BASE BID COST					
General, Demolition, Clearing, Grubbing, and Earthwork					
1	1	l.s.	Payment and Performance Bonds	$35,870.00	$35,870.00
2	1	l.s.	Mobilization and Demobilization	$54,880.00	$54,880.00
3	1	l.s.	Demolition, Clearing, and Grubbing (Approximately 5 acres)	$88,000.00	$88,000.00
4	980	l.f.	Removal/Stone Backfill of Existing Pipe (4" & larger, all material)	$22.19	$21,746.20
5	13	each	Remove Existing Sanitary Manhole/Storm Structure & Backfill	$403.85	$5,250.05
6	15	c.y.	Slurry Fill of Abandoned Pipes	$300.00	$4,500.00
7	4207	s.y.	Remove Existing Pavements (Concrete and Asphalt)	$3.57	$15,018.99
8	2	each	Remove Existing Fire Hydrant	$150.00	$300.00
9	1	l.s.	Earthwork	$70,800.00	$70,800.00
10	1	l.s.	Topsoil	$77,500.00	$77,500.00
11	1500	c.y.i.p.	Removal/Disposal/Replacement of Unsuitable Material	$17.44	$26,160.00
Base, Pave and Curb & Gutter Improvements					
12	200	s.y.	Milling/Planing Existing Pavement (Thickness Varies)	$9.88	$1,976.00
13	8995	s.y.	Roadbed Processing	$0.81	$7,285.95
14	247	s.y.	Crushed Aggregate Stone Base, 825B (4" Thickness) (Concrete Pavement & Residential Drives)	$7.57	$1,869.79
15	7329	s.y.	Crushed Aggregate Stone Base, 825B (6" Thickness) (Asphalt Pavement & Speed Tables)	$7.31	$53,574.99
16	7101	s.y.	Bituminous Treatment A (ALDOT 401)	$0.94	$6,674.94
17	602	gal	Tack Coat (ALDOT 405A)	$2.98	$1,793.96
18	6023	s.y.	Bituminous Concrete Wearing Surface Layer, 1/2" Max Aggregate Mix (ALDOT 424A) (1.5" Compacted Thickness)	$7.23	$43,546.29
19	6023	s.y.	Bituminous Concrete Lower Binder Layer, 1" Max Aggregate Mix (ALDOT 424B) (3" Compacted Thickness)	$11.74	$70,710.02
20	1500	s.y.	Temporary Asphalt Patching (2" Asphalt Thickness)	$16.59	$24,885.00
21	217	s.y.	Concrete Driveway - Residential (6" Thick)	$48.50	$10,524.50
22	45	s.y.	Concrete Pavement (Drives at APCO Substation)	$57.25	$2,576.25
23	202	s.y.	Concrete Speed Table	$54.50	$11,009.00
24	1057	s.y.	Concrete Sidewalk	$42.43	$44,848.51
25	2282	s.y.	Concrete City Walk	$54.60	$124,597.20
26	727	s.f.	Truncated Dome Pavers	$12.36	$8,985.72
27	24	each	Handicap Ramps	$700.00	$16,800.00
28	1406	s.y.	Permeable Concrete Pavers (Includes all Stone Base Materials, Concrete Band, & Underdrain)	$125.22	$176,059.32
29	846	l.f.	Combination Curb and Gutter	$17.78	$15,041.88
30	2025	l.f.	6" Standup Curb	$17.32	$35,073.00
31	2594	l.f.	8" Standup Curb (Includes Median Curb Cuts)	$17.34	$44,979.96
32	114	l.f.	6' Valley Gutter	$47.30	$5,392.20
Storm Sewer System Improvements					
33	360	l.f.	15" R.C. Pipe, Class 3	$26.25	$9,450.00
34	275	l.f.	18" R.C. Pipe, Class 3	$32.10	$8,827.50
35	340	l.f.	24" R.C. Pipe, Class 3	$34.43	$11,706.20
36	160	l.f.	30" R.C. Pipe, Class 3	$43.09	$6,894.40
37	57	l.f.	22" x 13 1/2" R.C. Arch Pipe, Class 3	$49.22	$2,805.54
38	615	l.f.	28 1/2" x 18" R.C. Arch Pipe, Class 3	$50.25	$30,903.75
39	79	l.f.	36 1/4" x 22 1/2" R.C. Arch Pipe, Class 3	$69.45	$5,486.55
40	12	each	Type "S" Inlet (1 Wing)(Depths Vary)	$2,300.00	$27,600.00
41	2	each	Concrete Junction Box (Depths Vary)	$2,515.00	$5,030.00
42	4	each	Grate Inlets	$1,860.00	$7,440.00
43	1	l.s.	Storm Structure 1-1 (Junction Box, Special)	$15,360.00	$15,360.00
44	1	l.s.	Storm Structure 4-1 (Type "S" Inlet (1 Wing), Special)	$5,277.00	$5,277.00

45	1	l.s.	Storm Structure 4-2 (Type "S" Inlet (1 Wing), Special)	$5,051.00	$5,051.00
46	1	l.s.	Storm Structure 4-3, (Type "S" Inlet (2 Wing), Special)	$5,051.00	$5,051.00
47	1	l.s.	Storm Structure 5-1 (Grate Inlet, Special)	$2,410.00	$2,410.00
48	1	l.s.	Storm Structure 7-1 (Junction Box, Special)	$17,100.00	$17,100.00
49	2	each	Remove/Raise Junction Box Ring & Cover to Grade	$550.00	$1,100.00
50	1	each	15" Slope Paved Headwall	$800.00	$800.00
51	3	each	Tie to Existing Storm Structure	$700.00	$2,100.00
Sanitary Sewer System Improvements					
52	285	l.f.	4" PVC DI CL 52 Sanitary Sewer Lateral (includes any req'd end caps)	$66.45	$18,938.25
53	937	l.f.	8" DI CL 52 Sanitary Sewer Main	$63.96	$59,930.52
54	231	l.f.	10" DI CL 52 Sanitary Sewer Main	$78.51	$18,135.81
55	8	each	Standard Precast Manhole	$2,640.00	$21,120.00
56	5	each	Standard Precast Doghouse Manhole	$2,475.00	$12,375.00
57	7	each	Tie to Existing Sewer Lateral	$95.00	$665.00
58	1	l.s.	Bypass Pumping	$4,800.00	$4,800.00
59	1168	l.f.	Post Construction Camera Inspection	$3.65	$4,263.20
Water Distribution and Fire Protection System Improvements					
60	390	l.f.	3/4" Type "K" Copper Water Service Line (includes cap where req'd)	$4.42	$1,723.80
61	40	l.f.	2" PVC CL 200 Watermain	$8.64	$345.60
62	10	l.f.	4" D.I. CL 350 Compression Joint Watermain	$40.06	$400.60
63	75	l.f.	6" D.I. Class 350 Compression Joint Watermain	$20.27	$1,520.25
64	1322	l.f.	8" D.I. Class 350 Compression Joint Watermain	$28.72	$37,967.84
65	253	l.f.	12" D.I. Class 350 Compression Joint Watermain	$80.94	$20,477.82
66	3	each	8" x 8" Tapping Sleeve, Valve, and Valve Box	$2,430.00	$7,290.00
67	2	each	2" Gate Valve and Valve Box	$500.00	$1,000.00
68	1	each	4" Gate Valve and Valve Box	$450.00	$450.00
69	9	each	8" Gate Valve and Valve Box	$900.00	$8,100.00
70	6	each	12" Gate Valve and Valve Box	$1,900.00	$11,400.00
71	4	each	8" DIMJ Water Main Plug (Incl. 2" Threaded Connection if Req'd)	$100.00	$400.00
72	2	each	12" DIMJ Water Main Plug (Incl. 2" Threaded Connection if Req'd)	$150.00	$300.00
73	8	each	Remove/Reset Existing Meter	$115.00	$920.00
74	1	each	3/4" Domestic Meter and Box	$600.00	$600.00
75	1	each	2" Irrigation Meter and Box	$4,190.00	$4,190.00
76	2	each	Flush Assembly	$500.00	$1,000.00
77	5	Each	Tie to Existing Watermain	$225.00	$1,125.00
78	3	each	Cut/Cap Existing Water Main	$155.00	$465.00
79	10	each	Direct Tap to Water Main	$110.00	$1,100.00
80	3	each	Fire Hydrant Assembly	$2,800.00	$8,400.00
81	1	l.s.	Pressure Testing and Disinfection (For Entire System)	$2,000.00	$2,000.00
Utility Improvements (Alabama Power Company, AT&T, Comcast, Tuscaloosa Department of Transportation)					
82	1	l.s.	2" Sch 40 PVC Conduit (APCO) (+/- 1,582 l.f.)	$8,357.00	$8,357.00
83	1	l.s.	3" Sch 40 PVC Conduit (APCO) (+/- 1,051 l.f.)	$9,054.00	$9,054.00
84	1	l.s.	5" Sch 40 PVC Conduit (APCO) (+/- 978 l.f.)	$14,171.00	$14,171.00
85	1	l.s.	1" Sch 40 PVC Conduit (AT&T) (+/- 937 l.f.)	$7,024.00	$7,024.00
86	1	l.s.	4" Sch 40 PVC Conduit (AT&T) (+/- 4,910 l.f.)	$37,188.00	$37,188.00
87	1	l.s.	3/4" Sch 40 PVC Conduit (TDOT) (+/- 10 l.f.)	$123.00	$123.00
88	1	l.s.	1 1/4" Sch 40 PVC Conduit (TDOT) (+/- 796 l.f.)	$5,610.00	$5,610.00
89	1	l.s.	1 1/2" Sch 40 PVC Conduit (TDOT) (+/- 2,907 l.f.)	$22,204.00	$22,204.00
90	1	l.s.	2" Sch 40 PVC Conduit (TDOT) (+/- 1,119 l.f.)	$8,185.00	$8,185.00
91	1	l.s.	4" Sch 40 PVC Conduit w\(3) 1 1/4" Innerducts (TDOT)(+/- 9000 l.f.)	$125,715.00	$125,715.00
92	1	l.s.	1" Sch 40 PVC Conduit (COMC) (+/- 629 l.f.)	$4,655.00	$4,655.00
93	1	l.s.	3" Sch 40 PVC Conduit (COMC) (+/- 1,782 l.f.)	$14,463.00	$14,463.00
94	2	each	4'x6'x4' Pull Box (APCO) (Installation Only)	$347.00	$694.00
95	2	each	Pad Mount Transformer (APCO) (Installation Only)	$248.00	$496.00
96	4	each	Secondary Pedestal (APCO) (Installation Only)	$132.50	$530.00
97	4	each	2.5'x4'x3' TDV Vault	$1,341.00	$5,364.00
98	1	each	4'x6'x4' TDV Vault	$2,512.00	$2,512.00
99	1	l.s.	Tie to Existing Conduits (From Phase 1A)	$2,392.00	$2,392.00
100	5	each	Tie to Existing Residential Power Panel (Service Conversion) (APCO)	$187.00	$935.00
Erosion Control					
101	1	l.s.	Erosion Control Management and Maintenance	$12,390.00	$12,390.00
Traffic Control					
102	1	l.s.	Traffic Control	$7,500.00	$7,500.00
103	1	l.s.	Construction Signs	$7,500.00	$7,500.00

Permanent Signing and Striping					
104	428	l.f.	Solid White, Class 1, Type A Traffic Stripe (4" Wide)	$0.45	$192.60
105	1033	l.f.	Dashed Yellow, Class1, Type A Traffic Stripe (4" Wide)	$0.40	$413.20
106	963	l.f.	Solid Yellow, Class 1, Type A Traffic Stripe (4" Wide)	$0.45	$433.35
107	306	l.f.	Solid White, Class 1, Type A Traffic Stripe (6" Wide)	$0.65	$198.90
108	100	l.f.	Dotted White, Class 1, Type A Traffic Stripe (6" Wide)	$0.50	$50.00
109	474	l.f.	Crosswalk Stripe (Traffic Control Markings, Class1, Type A)	$7.95	$3,768.30
110	129	l.f.	2' Stop Bar (Traffic Control Markings, Class 1, Type A)	$1.50	$193.50
111	44	l.f.	Yield Bar (Traffic Control Markings, Class 1, Type A)	$6.00	$264.00
112	3	each	Only's (Traffic Control Legends, Class 1, Type A)	$55.00	$165.00
113	3	each	Arrows (Traffic Control Markings, Class 1, Type A)	$38.00	$114.00
114	8	each	Decorative Signs	$1,635.00	$13,080.00
Miscellaneous Items					
115	100	tons	ALDOT No. 24 Stone (Miscellaneous Use As Directed by the Owner's Representative)	$25.00	$2,500.00
116	100	tons	ALDOT No. 57 Stone (Miscellaneous Use As Directed by the Owner's Representative)	$25.00	$2,500.00
117	100	tons	ALDOT No. 8910 Stone (Miscellaneous Use As Directed by the Owner's Representative)	$25.00	$2,500.00
118	150	c.y.	Utility Trench Foundation Material (As Directed by Owner's Representative)	$45.00	$6,750.00
119	1500	s.y.	Geotextile Stabilization Mat (Mirafi HP570) (Only As Directed by the Owner's Representative)	$2.90	$4,350.00
120	1000	l.f.	6" Underdrain (As Directed by the Owner's Representative)	$3.88	$3,880.00
121	11	each	6" Removable Bollard	$675.00	$7,425.00
122	2	each	8' Metal Bench	$1,970.00	$3,940.00
123	6	each	Trash Receptacle	$1,285.00	$7,710.00
124	8	each	Remove\Reset Mailbox	$50.00	$400.00
Landscaping and Irrigation Improvements					
125	229	each	Ballerina Indian Hawthorn - 3 Gallon	$17.51	$4,009.79
126	82	each	Big Blue Liriope - 1 Gallon	$5.57	$456.74
127	160	each	Coral Drift Rose - 3 Gallon	$27.81	$4,449.60
128	148	each	Dwarf Maiden Grass - 3 Gallon	$31.93	$4,725.64
129	60	each	Little Richard Abelia - 3 Gallon	$15.45	$927.00
130	126	each	Kaleidoscope Abelia - 3 Gallon	$31.93	$4,023.18
131	30	each	Willow Oak - 4" Caliper	$334.75	$10,042.50
132	26	each	Commemoration Sugar Maple - 4" Caliper	$334.75	$8,703.50
133	13	each	Nuttall Oak - 4" Caliper	$334.75	$4,351.75
134	11	each	Chinese Pistache - 4" Caliper	$334.75	$3,682.25
135	16	each	Sarah's Favorite Crape Myrtle - 10' to 12' Ht.	$212.18	$3,394.88
136	26	each	Tuscarora Crape Myrtle - 10' to 12' Ht.	$212.18	$5,516.68
137	22	each	Princeton Elm - 4" Caliper	$334.75	$7,364.50
138	15000	s.y.	Empire Zoysia Sod	$6.80	$102,000.00
139	300	s.y.	Bermuda Sod	$3.85	$1,155.00
140	1000	s.y.	Permanent Seed & Mulch	$5.15	$5,150.00
141	1	l.s.	Irrigation System - Complete In Place	$91,487.79	$91,487.79
Electrical Improvements					
142	1	l.s.	Electrical Improvements	$38,510.00	$38,510.00
143	2	each	Lighting Controller	$4,134.00	$8,268.00
144	14	each	Street Fixture - Type A (Installation Only-Material By City)	$1,740.00	$24,360.00
145	***24***	***each***	***City Walk Fixture - Type C (Installation Only-Material By City)***	$1,928.00	$46,272.00
146	***2***	***each***	***Street/City Walk Fixture - Type B (Installation Only-Material By City)***	$2,490.00	$4,980.00
				Total Base Bid Cost	***$2,271,747.00***

ALTERNATE NO. 1					
Install PVC Sewer Pipe in Lieu of Ductile Iron Sewer Pipe (unit cost shall be listed as additive or deductive difference to respective unit cost in base bid above)					
A1	285	l.f.	4" PVC SDR 26 Sanitary Sewer Lateral (includes any req'd end caps)	-$39.64	-$11,297.40
A2	937	l.f.	8" PVC SDR 26 Sanitary Sewer Main	-$30.59	-$28,662.83
				Subtotal Alternate No. 1 Cost	***-$39,960.23***
				Total Base Bid Cost + Alternate No. 1	***$2,231,786.77***



STATE OF ALABAMA

BID LIMIT: U

AMOUNT: UNLIMITED

LICENSE NO.: 20976

TYPE: RENEWAL

State Licensing Board for General Contractors

THIS IS TO CERTIFY THAT

RYAN SHIRLEY INC

NORTHPORT, AL 35476

is hereby licensed a General Contractor in the State of Alabama and is authorized to perform the following type(s) of work:

H/RR-S: MINING PROJECTS, H/RR-S: RAILROADS, HS: HIGHWAYS AND STREETS, MU-S: SEWER PROJECTS, MU-S: WATER PROJECTS

until **June 30, 2015** when this Certificate expires.

Witness our hands and seal of the Board, dated Montgomery, Ala.,

1st day of **June, 2014**

100829

SECRETARY-TREASURER

CHAIRMAN

CITY OF TUSCALOOSA

BUSINESS LICENSE

EXPIRES DECEMBER 31, 2015

THIS LICENSE IS NOT TRANSFERABLE
OWNERSHIP CHANGE REQUIRES NEW LICENSE
LOCATION CHANGE REQUIRES APPROVAL

ACCOUNT ID: 003933
ISSUE NO: 880
ISSUE DATE: 01/16/2015

2015

NAICS: 236200
CATEGORY: CONTRACTOR
TYPE: GENERAL

RYAN SHIRLEY INC
P.O. BOX 657
NORTHPORT, AL 35476

LINDA S. MCKINNEY
DIRECTOR OF REVENUE

WALTER MADDOX
MAYOR

****RENEW BEFORE FEBRUARY 16TH TO AVOID PENALTIES****

BUSINESS COPY / BUSINESS LICENSE RECEIPT

PLEASE POST TOP PORTION IN A VISIBLE LOCATION

CITY OF TUSCALOOSA REVENUE DEPARTMENT
P O BOX 2089
TUSCALOOSA, AL 35403

PHONE: (205) 248-5200 FAX: 205-349-0180
www.tuscaloosa.com

BUSINESS: RYAN SHIRLEY INC
6425 5 ST
NORTHPORT, AL 35476

NAICS: 236200
CATEGORY: CONTRACTOR
TYPE: GENERAL

ACCOUNT ID: 003933

ISSUE NO: 880

ISSUED BY: MJC
ISSUE DATE: 01/16/2015

AMOUNT:	9,293.00
SUB TOTAL:	9,293.00
ISSUE FEE:	5.00
AMOUNT PAID:	9,298.00

E-Verify

Company ID Number: 476369

THE E-VERIFY PROGRAM FOR EMPLOYMENT VERIFICATION MEMORANDUM OF UNDERSTANDING

ARTICLE I

PURPOSE AND AUTHORITY

This Memorandum of Understanding (MOU) sets forth the points of agreement between the Department of Homeland Security (DHS) and Ryan Shirley, Inc. (Employer) regarding the Employer's participation in the Employment Eligibility Verification Program (E-Verify). This MOU explains certain features of the E-Verify program and enumerates specific responsibilities of DHS, the Social Security Administration (SSA), and the Employer. E-Verify is a program that electronically confirms an employee's eligibility to work in the United States after completion of the Employment Eligibility Verification Form (Form I-9). For covered government contractors, E-Verify is used to verify the employment eligibility of all newly hired employees and all existing employees assigned to Federal contracts or to verify the entire workforce if the contractor so chooses.

Authority for the E-Verify program is found in Title IV, Subtitle A, of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. 104-208, 110 Stat. 3009, as amended (8 U.S.C. § 1324a note). Authority for use of the E-Verify program by Federal contractors and subcontractors covered by the terms of Subpart 22.18, "Employment Eligibility Verification", of the Federal Acquisition Regulation (FAR) (hereinafter referred to in this MOU as a "Federal contractor with the FAR E-Verify clause") to verify the employment eligibility of certain employees working on Federal contracts is also found in Subpart 22.18 and in Executive Order 12989, as amended.

ARTICLE II

FUNCTIONS TO BE PERFORMED

A. RESPONSIBILITIES OF SSA

1. SSA agrees to provide the Employer with available information that allows the Employer to confirm the accuracy of Social Security Numbers provided by all employees verified under this MOU and the employment authorization of U.S. citizens.

2. SSA agrees to provide to the Employer appropriate assistance with operational problems that may arise during the Employer's participation in the E-Verify program. SSA agrees to provide the Employer with names, titles, addresses, and telephone numbers of SSA representatives to be contacted during the E-Verify process.

3. SSA agrees to safeguard the information provided by the Employer through the E-Verify program procedures, and to limit access to such information, as is appropriate by law, to individuals responsible for the verification of Social Security Numbers and for evaluation of the E-Verify program or such other persons or entities who may be authorized by SSA as governed by the Privacy Act (5 U.S.C. § 552a), the Social Security Act (42 U.S.C. 1306(a)), and SSA regulations (20 CFR Part 401).

4. SSA agrees to provide a means of automated verification that is designed (in conjunction with DHS's automated system if necessary) to provide confirmation or tentative nonconfirmation of U.S. citizens' employment eligibility within 3 Federal Government work days of the initial inquiry.

5. SSA agrees to provide a means of secondary verification (including updating SSA records as may be necessary) for employees who contest SSA tentative nonconfirmations that is designed to provide final confirmation or nonconfirmation of U.S. citizens' employment eligibility and accuracy of SSA records for both citizens and non-citizens within 10 Federal Government work days of the date of referral to SSA, unless SSA determines that more than 10 days may be necessary. In such cases, SSA will provide additional verification instructions.

B. RESPONSIBILITIES OF DHS

1. After SSA verifies the accuracy of SSA records for employees through E-Verify, DHS agrees to provide the Employer access to selected data from DHS's database to enable the Employer to conduct, to the extent authorized by this MOU:

- Automated verification checks on employees by electronic means, and
- Photo verification checks (when available) on employees.

2. DHS agrees to provide to the Employer appropriate assistance with operational problems that may arise during the Employer's participation in the E-Verify program. DHS agrees to provide the Employer names, titles, addresses, and telephone numbers of DHS representatives to be contacted during the E-Verify process.

3. DHS agrees to make available to the Employer at the E-Verify Web site and on the E-Verify Web browser, instructional materials on E-Verify policies, procedures and requirements for both SSA and DHS, including restrictions on the use of E-Verify. DHS agrees to provide training materials on E-Verify.

4. DHS agrees to provide to the Employer a notice, which indicates the Employer's participation in the E-Verify program. DHS also agrees to provide to the Employer anti-discrimination notices issued by the Office of Special Counsel for Immigration-Related Unfair Employment Practices (OSC), Civil Rights Division, U.S. Department of Justice.

5. DHS agrees to issue the Employer a user identification number and password that permits the Employer to verify information provided by employees with DHS's database.

6. DHS agrees to safeguard the information provided to DHS by the Employer, and to limit access to such information to individuals responsible for the verification of employees' employment eligibility and for evaluation of the E-Verify program, or to such other persons or entities as may be authorized by applicable law. Information will be used only to verify the accuracy of Social Security Numbers and employment eligibility, to enforce the Immigration and Nationality Act (INA) and Federal criminal laws, and to administer Federal contracting requirements.

7. DHS agrees to provide a means of automated verification that is designed (in conjunction with SSA verification procedures) to provide confirmation or tentative nonconfirmation of employees' employment eligibility within 3 Federal Government work days of the initial inquiry.

8. DHS agrees to provide a means of secondary verification (including updating DHS records as may be necessary) for employees who contest DHS tentative nonconfirmations and photo non-match tentative nonconfirmations that is designed to provide final confirmation or nonconfirmation of the employees' employment eligibility within 10 Federal Government work days of the date of referral to DHS, unless DHS determines that more than 10 days may be necessary. In such cases, DHS will provide additional verification instructions.

C. RESPONSIBILITIES OF THE EMPLOYER

1. The Employer agrees to display the notices supplied by DHS in a prominent place that is clearly visible to prospective employees and all employees who are to be verified through the system.

2. The Employer agrees to provide to the SSA and DHS the names, titles, addresses, and telephone numbers of the Employer representatives to be contacted regarding E-Verify.

3. The Employer agrees to become familiar with and comply with the most recent version of the E-Verify User Manual.

4. The Employer agrees that any Employer Representative who will perform employment verification queries will complete the E-Verify Tutorial before that individual initiates any queries.

A. The Employer agrees that all Employer representatives will take the refresher tutorials initiated by the E-Verify program as a condition of continued use of E-Verify.

B. Failure to complete a refresher tutorial will prevent the Employer from continued use of the program.

5. The Employer agrees to comply with current Form I-9 procedures, with two exceptions:

• If an employee presents a "List B" identity document, the Employer agrees to only accept "List B" documents that contain a photo. (List B documents identified in 8 C.F.R. § 274a.2(b)(1)(B)) can be presented during the Form I-9 process to establish identity.) If an employee objects to the photo requirement for religious reasons, the Employer should contact E-Verify at 888-464-4218.

• If an employee presents a DHS Form I-551 (Permanent Resident Card) or Form I-766 (Employment Authorization Document) to complete the Form I-9, the Employer agrees to make a photocopy of the document and to retain the photocopy with the employee's Form I-9. The photocopy must be of sufficient quality to allow for verification of the photo and written information. The employer will use the photocopy to verify the photo and to assist DHS with its review of

photo non-matches that are contested by employees. Note that employees retain the right to present any List A, or List B and List C, documentation to complete the Form I-9. DHS may in the future designate other documents that activate the photo screening tool.

6. The Employer understands that participation in E-Verify does not exempt the Employer from the responsibility to complete, retain, and make available for inspection Forms I-9 that relate to its employees, or from other requirements of applicable regulations or laws, including the obligation to comply with the antidiscrimination requirements of section 274B of the INA with respect to Form I-9 procedures, except for the following modified requirements applicable by reason of the Employer's participation in E-Verify: (1) identity documents must have photos, as described in paragraph 5 above; (2) a rebuttable presumption is established that the Employer has not violated section 274A(a)(1)(A) of the Immigration and Nationality Act (INA) with respect to the hiring of any individual if it obtains confirmation of the identity and employment eligibility of the individual in good faith compliance with the terms and conditions of E-Verify; (3) the Employer must notify DHS if it continues to employ any employee after receiving a final nonconfirmation, and is subject to a civil money penalty between $550 and $1,100 for each failure to notify DHS of continued employment following a final nonconfirmation; (4) the Employer is subject to a rebuttable presumption that it has knowingly employed an unauthorized alien in violation of section 274A(a)(1)(A) if the Employer continues to employ an employee after receiving a final nonconfirmation; and (5) no person or entity participating in E-Verify is civilly or criminally liable under any law for any action taken in good faith based on information provided through the confirmation system. DHS reserves the right to conduct Form I-9 and E-Verify system compliance inspections during the course of E-Verify, as well as to conduct any other enforcement activity authorized by law.

7. The Employer agrees to initiate E-Verify verification procedures for new employees within 3 Employer business days after each employee has been hired (but after the Form I-9 has been completed), and to complete as many (but only as many) steps of the E-Verify process as are necessary according to the E-Verify User Manual, or in the case of Federal contractors with the FAR E-Verify clause, the E-Verify User Manual for Federal Contractors. The Employer is prohibited from initiating verification procedures before the employee has been hired and the Form I-9 completed. If the automated system to be queried is temporarily unavailable, the 3-day time period is extended until it is again operational in order to accommodate the Employer's attempting, in good faith, to make inquiries during the period of unavailability. Employers may initiate verification by notating the Form I-9 in circumstances where the employee has applied for a Social Security Number (SSN) from the SSA and is waiting to receive the SSN, provided that the Employer performs an E-Verify employment verification query using the employee's SSN as soon as the SSN becomes available.

8. The Employer agrees not to use E-Verify procedures for pre-employment screening of job applicants, in support of any unlawful employment practice, or for any other use not authorized by this MOU. Employers must use E-Verify for all new employees, unless an Employer is a Federal contractor that qualifies for the exceptions described in Article II.D.1.c. Except as provided in Article II.D, the Employer will not verify selectively and will not verify employees hired before the effective date of this MOU. The Employer understands that if the Employer uses the E-Verify system for any purpose other than as

authorized by this MOU, the Employer may be subject to appropriate legal action and termination of its access to SSA and DHS information pursuant to this MOU.

9. The Employer agrees to follow appropriate procedures (see Article III. below) regarding tentative nonconfirmations, including notifying employees in private of the finding and providing them written notice of the findings, providing written referral instructions to employees, allowing employees to contest the finding, and not taking adverse action against employees if they choose to contest the finding. Further, when employees contest a tentative nonconfirmation based upon a photo non-match, the Employer is required to take affirmative steps (see Article III.B. below) to contact DHS with information necessary to resolve the challenge.

10. The Employer agrees not to take any adverse action against an employee based upon the employee's perceived employment eligibility status while SSA or DHS is processing the verification request unless the Employer obtains knowledge (as defined in 8 C.F.R. § 274a.1(l)) that the employee is not work authorized. The Employer understands that an initial inability of the SSA or DHS automated verification system to verify work authorization, a tentative nonconfirmation, a case in continuance (indicating the need for additional time for the government to resolve a case), or the finding of a photo non-match, does not establish, and should not be interpreted as evidence, that the employee is not work authorized. In any of the cases listed above, the employee must be provided a full and fair opportunity to contest the finding, and if he or she does so, the employee may not be terminated or suffer any adverse employment consequences based upon the employee's perceived employment eligibility status (including denying, reducing, or extending work hours, delaying or preventing training, requiring an employee to work in poorer conditions, refusing to assign the employee to a Federal contract or other assignment, or otherwise subjecting an employee to any assumption that he or she is unauthorized to work) until and unless secondary verification by SSA or DHS has been completed and a final nonconfirmation has been issued. If the employee does not choose to contest a tentative nonconfirmation or a photo non-match or if a secondary verification is completed and a final nonconfirmation is issued, then the Employer can find the employee is not work authorized and terminate the employee's employment. Employers or employees with questions about a final nonconfirmation may call E-Verify at 1-888-464-4218 or OSC at 1-800-255-8155 or 1-800-237-2515 (TDD).

11. The Employer agrees to comply with Title VII of the Civil Rights Act of 1964 and section 274B of the INA, as applicable, by not discriminating unlawfully against any individual in hiring, firing, or recruitment or referral practices because of his or her national origin or, in the case of a protected individual as defined in section 274B(a)(3) of the INA, because of his or her citizenship status. The Employer understands that such illegal practices can include selective verification or use of E-Verify except as provided in part D below, or discharging or refusing to hire employees because they appear or sound "foreign" or have received tentative nonconfirmations. The Employer further understands that any violation of the unfair immigration-related employment practices provisions in section 274B of the INA could subject the Employer to civil penalties, back pay awards, and other sanctions, and violations of Title VII could subject the Employer to back pay awards, compensatory and punitive damages. Violations of either section 274B of the INA or Title VII may also lead to the termination of its participation in E-Verify. If the Employer has any questions relating to the anti-discrimination provision, it should contact OSC at 1-800-255-8155 or 1-800-237-2515 (TDD).

12. The Employer agrees to record the case verification number on the employee's Form I-9 or to print the screen containing the case verification number and attach it to the employee's Form I-9.

13. The Employer agrees that it will use the information it receives from SSA or DHS pursuant to E-Verify and this MOU only to confirm the employment eligibility of employees as authorized by this MOU. The Employer agrees that it will safeguard this information, and means of access to it (such as PINS and passwords) to ensure that it is not used for any other purpose and as necessary to protect its confidentiality, including ensuring that it is not disseminated to any person other than employees of the Employer who are authorized to perform the Employer's responsibilities under this MOU, except for such dissemination as may be authorized in advance by SSA or DHS for legitimate purposes.

14. The Employer acknowledges that the information which it receives from SSA is governed by the Privacy Act (5 U.S.C. § 552a(i)(1) and (3)) and the Social Security Act (42 U.S.C. 1306(a)), and that any person who obtains this information under false pretenses or uses it for any purpose other than as provided for in this MOU may be subject to criminal penalties.

15. The Employer agrees to cooperate with DHS and SSA in their compliance monitoring and evaluation of E-Verify, including by permitting DHS and SSA, upon reasonable notice, to review Forms I-9 and other employment records and to interview it and its employees regarding the Employer's use of E-Verify, and to respond in a timely and accurate manner to DHS requests for information relating to their participation in E-Verify.

D. RESPONSIBILITIES OF FEDERAL CONTRACTORS WITH THE FAR E-VERIFY CLAUSE

1. The Employer understands that if it is a subject to the employment verification terms in Subpart 22.18 of the FAR, it must verify the employment eligibility of any existing employee assigned to the contract and all new hires, as discussed in the Supplemental Guide for Federal Contractors. Once an employee has been verified through E-Verify by the Employer, the Employer may not reverify the employee through E-Verify.

a. Federal contractors with the FAR E-Verify clause agree to become familiar with and comply with the most recent versions of the E-Verify User Manual for Federal Contractors and the E-Verify Supplemental Guide for Federal Contractors.

b. Federal contractors with the FAR E-Verify clause agree to complete a tutorial for Federal contractors with the FAR E-Verify clause.

c. Federal contractors with the FAR E-Verify clause not enrolled at the time of contract award: An Employer that is not enrolled in E-Verify at the time of a contract award must enroll as a Federal contractor with the FAR E-Verify clause in E-Verify within 30 calendar days of contract award and, within 90 days of enrollment, begin to use E-Verify to initiate verification of employment eligibility of new hires of the Employer who are working in the United States, whether or not assigned to the contract. Once the Employer begins verifying new hires, such verification of new hires must be initiated

within 3 business days after the date of hire. Once enrolled in E-Verify as a Federal contractor with the FAR E-Verify clause, the Employer must initiate verification of employees assigned to the contract within 90 calendar days from the time of enrollment in the system and after the date and selecting which employees will be verified in E-Verify or within 30 days of an employee's assignment to the contract, whichever date is later.

d. Employers that are already enrolled in E-Verify at the time of a contract award but are not enrolled in the system as a Federal contractor with the FAR E-Verify clause: Employers enrolled in E-Verify for 90 days or more at the time of a contract award must use E-Verify to initiate verification of employment eligibility for new hires of the Employer who are working in the United States, whether or not assigned to the contract, within 3 business days after the date of hire. Employers enrolled in E-Verify as other than a Federal contractor with the FAR E-Verify clause, must update E-Verify to indicate that they are a Federal contractor with the FAR E-Verify clause within 30 days after assignment to the contract. If the Employer is enrolled in E-Verify for 90 calendar days or less at the time of contract award, the Employer must, within 90 days of enrollment, begin to use E-Verify to initiate verification of new hires of the contractor who are working in the United States, whether or not assigned to the contract. Such verification of new hires must be initiated within 3 business days after the date of hire. An Employer enrolled as a Federal contractor with the FAR E-Verify clause in E-Verify must initiate verification of each employee assigned to the contract within 90 calendar days after date of contract award or within 30 days after assignment to the contract, whichever is later.

e. Institutions of higher education, State, local and tribal governments and sureties: Federal contractors with the FAR E-Verify clause that are institutions of higher education (as defined at 20 U.S.C. 1001(a)), State or local governments, governments of Federally recognized Indian tribes, or sureties performing under a takeover agreement entered into with a Federal agency pursuant to a performance bond may choose to only verify new and existing employees assigned to the Federal contract. Such Federal contractors with the FAR E-Verify clause may, however, elect to verify all new hires, and/or all existing employees hired after November 6, 1986. The provisions of Article II.D, paragraphs 1.a and 1.b of this MOU providing timeframes for initiating employment verification of employees assigned to a contract apply to such institutions of higher education, State, local and tribal governments, and sureties.

f. Verification of all employees: Upon enrollment, Employers who are Federal contractors with the FAR E-Verify clause may elect to verify employment eligibility of all existing employees working in the United States who were hired after November 6, 1986, instead of verifying only new employees and those existing employees assigned to a covered Federal contract. After enrollment, Employers must elect to do so only in the manner designated by DHS and initiate E-Verify verification of all existing employees within 180 days after the election.

g. Form I-9 procedures for existing employees of Federal contractors with the FAR E-Verify clause: Federal contractors with the FAR E-Verify clause may choose to complete new Forms I-9 for all existing employees other than those that are completely exempt from this process. Federal contractors with the FAR E-Verify clause may also update previously completed Forms I-9 to initiate E-Verify verification of existing employees who are not completely exempt as long as that Form I-9 is complete (including the SSN), complies with Article II.C.5, the employee's work authorization has

not expired, and the Employer has reviewed the information reflected in the Form I-9 either in person or in communications with the employee to ensure that the employee's stated basis in section 1 of the Form I-9 for work authorization has not changed (including, but not limited to, a lawful permanent resident alien having become a naturalized U.S. citizen). If the Employer is unable to determine that the Form I-9 complies with Article II.C.5, if the employee's basis for work authorization as attested in section 1 has expired or changed, or if the Form I-9 contains no SSN or is otherwise incomplete, the Employer shall complete a new I-9 consistent with Article II.C.5, or update the previous I-9 to provide the necessary information. If section 1 of the Form I-9 is otherwise valid and up-to-date and the form otherwise complies with Article II.C.5, but reflects documentation (such as a U.S. passport or Form I-551) that expired subsequent to completion of the Form I-9, the Employer shall not require the production of additional documentation, or use the photo screening tool described in Article II.C.5, subject to any additional or superseding instructions that may be provided on this subject in the Supplemental Guide for Federal Contractors. Nothing in this section shall be construed to require a second verification using E-Verify of any assigned employee who has previously been verified as a newly hired employee under this MOU, or to authorize verification of any existing employee by any Employer that is not a Federal contractor with the FAR E-Verify clause.

2. The Employer understands that if it is a Federal contractor with the FAR E-Verify clause, its compliance with this MOU is a performance requirement under the terms of the Federal contract or subcontract, and the Employer consents to the release of information relating to compliance with its verification responsibilities under this MOU to contracting officers or other officials authorized to review the Employer's compliance with Federal contracting requirements.

ARTICLE III

REFERRAL OF INDIVIDUALS TO SSA AND DHS

A. REFERRAL TO SSA

1. If the Employer receives a tentative nonconfirmation issued by SSA, the Employer must print the notice as directed by the E-Verify system and provide it to the employee so that the employee may determine whether he or she will contest the tentative nonconfirmation. The Employer must review the tentative nonconfirmation with the employee in private.

2. The Employer will refer employees to SSA field offices only as directed by the automated system based on a tentative nonconfirmation, and only after the Employer records the case verification number, reviews the input to detect any transaction errors, and determines that the employee contests the tentative nonconfirmation. The Employer will transmit the Social Security Number to SSA for verification again if this review indicates a need to do so. The Employer will determine whether the employee contests the tentative nonconfirmation as soon as possible after the Employer receives it.

3. If the employee contests an SSA tentative nonconfirmation, the Employer will provide the employee with a system-generated referral letter and instruct the employee to visit an SSA office within 8 Federal Government work days. SSA will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the

referral unless it determines that more than 10 days is necessary. The Employer agrees to check the E-Verify system regularly for case updates.

4. The Employer agrees not to ask the employee to obtain a printout from the Social Security Number database (the Numident) or other written verification of the Social Security Number from the SSA.

B. REFERRAL TO DHS

1. If the Employer receives a tentative nonconfirmation issued by DHS, the Employer must print the tentative nonconfirmation notice as directed by the E-Verify system and provide it to the employee so that the employee may determine whether he or she will contest the tentative nonconfirmation. The Employer must review the tentative nonconfirmation with the employee in private.

2. If the Employer finds a photo non-match for an employee who provides a document for which the automated system has transmitted a photo, the employer must print the photo non-match tentative nonconfirmation notice as directed by the automated system and provide it to the employee so that the employee may determine whether he or she will contest the finding. The Employer must review the tentative nonconfirmation with the employee in private.

3. The Employer agrees to refer individuals to DHS only when the employee chooses to contest a tentative nonconfirmation received from DHS automated verification process or when the Employer issues a tentative nonconfirmation based upon a photo non-match. The Employer will determine whether the employee contests the tentative nonconfirmation as soon as possible after the Employer receives it.

4. If the employee contests a tentative nonconfirmation issued by DHS, the Employer will provide the employee with a referral letter and instruct the employee to contact DHS through its toll-free hotline (as found on the referral letter) within 8 Federal Government work days.

5. If the employee contests a tentative nonconfirmation based upon a photo non-match, the Employer will provide the employee with a referral letter to DHS. DHS will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary. The Employer agrees to check the E-Verify system regularly for case updates.

6. The Employer agrees that if an employee contests a tentative nonconfirmation based upon a photo non-match, the Employer will send a copy of the employee's Form I-551 or Form I-766 to DHS for review by:

- Scanning and uploading the document, or
- Sending a photocopy of the document by an express mail account (paid for at employer expense).

7. If the Employer determines that there is a photo non-match when comparing the photocopied List B document described in Article II.C.5 with the image generated in E-Verify, the Employer must forward the employee's documentation to DHS using one of the means described in the preceding paragraph, and allow DHS to resolve the case.

ARTICLE IV

SERVICE PROVISIONS

SSA and DHS will not charge the Employer for verification services performed under this MOU. The Employer is responsible for providing equipment needed to make inquiries. To access E-Verify, an Employer will need a personal computer with Internet access.

ARTICLE V

PARTIES

A. This MOU is effective upon the signature of all parties, and shall continue in effect for as long as the SSA and DHS conduct the E-Verify program unless modified in writing by the mutual consent of all parties, or terminated by any party upon 30 days prior written notice to the others. Any and all system enhancements to the E-Verify program by DHS or SSA, including but not limited to the E-Verify checking against additional data sources and instituting new verification procedures, will be covered under this MOU and will not cause the need for a supplemental MOU that outlines these changes. DHS agrees to train employers on all changes made to E-Verify through the use of mandatory refresher tutorials and updates to the E-Verify User Manual, the E-Verify User Manual for Federal Contractors or the E-Verify Supplemental Guide for Federal Contractors. Even without changes to E-Verify, DHS reserves the right to require employers to take mandatory refresher tutorials. An Employer that is a Federal contractor with the FAR E-Verify clause may terminate this MOU when the Federal contract that requires its participation in E-Verify is terminated or completed. In such a circumstance, the Federal contractor with the FAR E-Verify clause must provide written notice to DHS. If an Employer that is a Federal contractor with the FAR E-Verify clause fails to provide such notice, that Employer will remain a participant in the E-Verify program, will remain bound by the terms of this MOU that apply to participants that are not Federal contractors with the FAR E-Verify clause, and will be required to use the E-Verify procedures to verify the employment eligibility of all newly hired employees.

B. Notwithstanding Article V, part A of this MOU, DHS may terminate this MOU if deemed necessary because of the requirements of law or policy, or upon a determination by SSA or DHS that there has been a breach of system integrity or security by the Employer, or a failure on the part of the Employer to comply with established procedures or legal requirements. The Employer understands that if it is a Federal contractor with the FAR E-Verify clause, termination of this MOU by any party for any reason may negatively affect its performance of its contractual responsibilities.

C. Some or all SSA and DHS responsibilities under this MOU may be performed by contractor(s), and SSA and DHS may adjust verification responsibilities between each other as they may determine necessary. By separate agreement with DHS, SSA has agreed to perform its responsibilities as described in this MOU.

D. Nothing in this MOU is intended, or should be construed, to create any right or benefit, substantive or procedural, enforceable at law by any third party against the United States, its agencies, officers, or employees, or against the Employer, its agents, officers, or employees.

E. Each party shall be solely responsible for defending any claim or action against it arising out of or related to E-Verify or this MOU, whether civil or criminal, and for any liability wherefrom, including (but not limited to) any dispute between the Employer and any other person or entity regarding the applicability of Section 403(d) of IIRIRA to any action taken or allegedly taken by the Employer.

F. The Employer understands that the fact of its participation in E-Verify is not confidential information and may be disclosed as authorized or required by law and DHS or SSA policy, including but not limited to, Congressional oversight, E-Verify publicity and media inquiries, determinations of compliance with Federal contractual requirements, and responses to inquiries under the Freedom of Information Act (FOIA).

G. The foregoing constitutes the full agreement on this subject between DHS and the Employer.

H. The individuals whose signatures appear below represent that they are authorized to enter into this MOU on behalf of the Employer and DHS respectively.

E-Verify

Company ID Number: 476369

To be accepted as a participant in E-Verify, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify at 888-464-4218.

Employer Ryan Shirley, Inc. Karen Hughes	
Name (Please Type or Print)	Title
Electronically Signed	12/19/2011
Signature	Date
Department of Homeland Security – Verification Division USCIS Verification Division	
Name (Please Type or Print)	Title
Electronically Signed	12/19/2011
Signature	Date

Information Required for the E-Verify Program

Information relating to your Company:

Company Name:	Ryan Shirley, Inc.
Company Facility Address:	6425 5th Street
	Northport, AL 35476
Company Alternate Address:	P.O. Box 657
	Northport, AL 35476
County or Parish:	TUSCALOOSA
Employer Identification Number:	631106599

E-Verify

Company ID Number: 476369

North American Industry Classification Systems Code:	237
Administrator:	
Number of Employees:	20 to 99
Number of Sites Verified for:	1

Are you verifying for more than 1 site? If yes, please provide the number of sites verified for in each State:

- ALABAMA 1 site(s)

Information relating to the Program Administrator(s) for your Company on policy questions or operational problems:

Name:	Karen Hughes		
Telephone Number:	(205) 330 - 1803	Fax Number:	(205) 330 - 9402
E-mail Address:	khughes@ryanshirleyinc.com		

STATE OF ALABAMA)
TUSCALOOSA COUNTY)

CITY OF TUSCALOOSA PUBLIC WORKS CONTRACT DOCUMENTS

SECTION FOUR
BID BOND TO THE CITY OF TUSCALOOSA, ALABAMA
(2015)

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, Ryan Shirley, Inc. as Principal; and Western Surety Company as Surety, (**NOTE:** If cashier's check drawn on an Alabama Bank utilized in lieu of corporate surety, attach check as required by bid documents) are hereby held and firmly bound unto the City of Tuscaloosa, Alabama, a Municipal Corporation, as obligee, hereinafter called the City, in the sum of Five Percent of Bid Amount not to Exceed Ten Thousand Dollars ($ 5% NTE $10,000) for the payment of which sum, well and truly to be made, the said Principal and Surety hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the City a certain Bid (Proposal), attached hereto and made a part hereof, to enter into a contract in writing with the City, for the following Project or portion thereof:

Project: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B

Location: TUSCALOOSA, ALABAMA

Architect or Engineer: WALKER ASSOCIATES, INC.

Project Number: A12-1324

NOW, THEREFORE,

(a) If said Bid shall be rejected, or in the alternate,

(b) If said Bid shall be awarded and the Principal shall execute and deliver a contract in the Form of Agreement as included in the Contract Documents for the Project, and shall execute and deliver Performance Bond and Payment Bond in the Forms as attached to the Contract Documents executed by a surety company authorized and qualified to make such bonds in the State of Alabama and in the amounts as required by the Instructions to Bidders and submit the insurance certifications as required by the bid document and fulfill all other qualifications and requirements of the Contract Documents and bid specifications (all properly completed in accordance with said Bid), and shall in all other respects perform the agreement created by the acceptance of said Bid within thirty (30) days after the prescribed forms have been presented to Bidder for execution;

Then, this obligation shall be void, otherwise, the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all default of the Principal hereunder shall be the amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall in no way be impaired or affected by any extension of the time within which the City may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the above-bonded parties have executed this instrument under their several seals, this the 28th day of April, 2015 the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

WITNESS:

PRINCIPAL:

Ryan Shirley, Inc. (SEAL)

By:

Title: PRESIDENT

Address: PO Drawer 657

Northport, AL 35476

SURETY:

Western Surety Company (SEAL)

101 S. Reid Street
(Business Address)
Sioux Falls, SD 57103

ATTEST:

By: Cheryl A. Camak

Title: Cheryl A. Camak
Attorney in Fact

NOTE: Surety must be qualified and duly authorized to make bonds in the state. All Bonds and Sureties are subject to review and approval by the City Attorney. Valid current Power of Attorney for Corporate Surety must be attached.

NOTE: Bidder may submit a cashier's check drawn on an Alabama bank to the order of the City of Tuscaloosa equal to 5% of the amount bid, in lieu of a Corporate Surety, under the same terms.

[END DOCUMENT—OFFICE OF THE CITY ATTORNEY]

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

T Gary Fitts, J David Fitts, Charles F Horton Jr, Timothy L Donahue, R Forrest Fitts, Cheryl A Camak, Christina Krout, Individually

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

- In Unlimited Amounts -

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

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 31st day of July, 2013.

WESTERN SURETY COMPANY

Paul T. Bruflat, Vice President

State of South Dakota
County of Minnehaha } ss

On this 31st day of July, 2013, before me personally came Paul T. Bruflat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires
June 23, 2015

J. MOHR
NOTARY PUBLIC
SOUTH DAKOTA

J. Mohr, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 28th day of April, 2015.

WESTERN SURETY COMPANY

L. Nelson, Assistant Secretary

Form F4280-7-2012

Authorizing By-Law

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

STATE OF ALABAMA)
TUSCALOOSA COUNTY)
CITY OF TUSCALOOSA)

CITY OF TUSCALOOSA PUBLIC WORKS CONTRACT DOCUMENTS

SECTION FIVE
CONTRACT AGREEMENT
(2015)

THIS AGREEMENT made and entered into this 13th day of MAY , 2015 , by and between RYAN SHIRLEY, INC. , hereinafter sometimes called the CONTRACTOR, as party of the first part, and the CITY OF TUSCALOOSA, Alabama, a Municipal Corporation, hereinafter sometimes called the CITY or OWNER, as party of the second part,

W-I-T-N-E-S-S-E-T-H:

In consideration of the amounts herein named and of the mutual agreements and provisions herein contained, the Contractor and the City agree in regard to a public works project (hereinafter either the "work" or the "Project") as described in the Advertisement for Bids.

The Contractor will perform the work and/or construct the Project as well as furnish at his own cost and expense all labor, tools, equipment and transportation as are herein and in the Contract documents required to be furnished by the Contractor, and shall perform all the work in a manner and form required to construct the Project described in and shown on the contract documents as the same are hereinafter more specifically described and as provided by the plans, specifications and documents which are attached hereto and made a part hereof, as if fully set out herein and addenda together with all plans and drawings on file in the office specified below.

ARTICLE I. GENERALLY

A. **Contract Documents:** As used throughout the documents constituting the contract, the term "Contract Documents" shall mean and include the following: Advertisement for Bids, Addenda (if issued), the Instructions to Bidders, the Bid Proposal, the General Specifications, the Detail Specifications, Supplemental and Special Conditions (if attached), together with this Contract Agreement and any modifications, including change orders, if made, and the drawings, plans and profiles that are now on file in the office referred to in the advertisement, the Performance Bond and the Labor and Material Bond, executed by the Contractor in connection with this Contract and insurance requirements and certificates.

All such documents hereinabove enumerated are adopted herein by reference and constitute the Contract between the parties to the same extent as if each were set out in full in this agreement.

B. **Independent Contractor:** The Contractor enters into this Contract with the City as an independent contractor and, as such, agrees that neither the City nor its officers, agents, employees or inspectors shall be responsible for the acts or omissions of the Contractor, or any subcontractor, or any of the Contractor's or subcontractor's agents or employees, or any other persons performing any of the work pursuant to this Contract. The Contractor shall be solely responsible for controlling construction manner, means and techniques consistent with the contract documents, plans and specifications.

C. **Order of Precedence:** Should there be a direct conflict between the various elements of the contract documents to the extent that the same cannot be reconciled to be read *in para materia,* then precedence shall be given the same in the following order:

1. Subsequent modifications (change orders or amendments) to contract agreement after execution
2. Addenda (if issued)
3. Supplemental general conditions and special conditions (if included)
4. The Contract Agreement
5. General and technical specifications
6. Large Scale Drawings (if included)
7. Enlarged Plans (if included)
8. Plans (if included)
9. Instructions to bidders
10. Advertisement for bids
11. Proposal (Bid)
12. Purchasing Agent Appointment Agreement (if utilized)

Where more than one document relates to the same matter if both can be given reasonable effect both are to be retained. Written specifications will take precedence over drawings.

D. **Integration; Contract Terms and Construction:**

1. Integration: This Agreement, together with all documents which constitute the "Contract Documents," constitute the entire agreement of the parties, as a complete and final integration thereof with respect to its subject matter. All understandings and agreements heretofore had between and among the parties are merged into this Agreement, which alone fully and completely expresses their understandings. No representation, warranty, or covenant made by any party which is not contained in this Agreement or expressly referred to herein has been relied on by any party in entering into this Agreement.
2. Amendment in Writing: This Agreement may not be amended, modified, altered, changed, terminated, or waived in any respect whatsoever, except by a further agreement or change order, in writing, properly executed by all of the parties.
3. Binding Effect: This Agreement shall bind the parties and their respective personal representatives, heirs, next of kin, legatees, distributees, successors, and assigns.
4. Captions: The captions of this Agreement are for convenience and reference only, are not a part of this Agreement, and in no way define, describe, extend, or limit the scope or intent of this Agreement.
5. Construction: This Agreement shall be construed in its entirety according to its plain meaning and shall not be construed against the party who provided or drafted it.
6. Mandatory and Permissive: "Shall," "will," and "agrees" are mandatory; "may" is permissive.
7. Governing Laws: The laws of the State of Alabama shall govern the validity of this Agreement, the construction of its terms, the interpretation of the rights, the duties of the parties, the enforcement of its terms, and all other matters relating to this Agreement.
8. Ownership of Contract Documents: The Contract Documents, and copies of parts thereof, are furnished and owned either by the City or the design professional. All portions of the Contract Documents, and copies of parts thereof, are the instruments of service for this Project. They are not to be used on other work and are to be returned to the City on request at the completion of the Project. Any reuse of these materials without specific written verification or adaptation by the City will be at the risk of the user and without liability or legal expense to the City or Engineer/Architect. Such user shall hold the City and Engineer/Architect harmless from any and all damages, including reasonable

attorneys' fees, from any and all claims arising from any such reuse. Any such verification and adoption shall entitle the City to further compensation at rates to be agreed upon by the user and the City.

E. **Rules of Construction:** For the purposes of this contract, except as otherwise expressly provided or unless the context otherwise requires:

1. Words of masculine, feminine or neuter gender include the correlative words of other genders. Singular terms include the plural as well as the singular, and vice versa.
2. All references herein to designated "articles," "sections," and other subdivisions or to lettered exhibits are to the designated articles, sections and subdivisions hereof and the exhibits annexed hereto unless expressly otherwise designated in context. All article, section, other subdivision and exhibit captions herein are used for reference only and do not limit or describe the scope or intent of, or in any way affect this agreement.
3. The terms "include," "including," and similar terms shall be construed as if followed by the phase, "without being limited to".
4. The terms "herein," "hereof," and "hereunder," and other words of similar import refer to this agreement as a whole and not to any particular article, section, other subdivision or exhibit.
5. All recitals set forth in, and all exhibits to, this agreement are hereby incorporated in this agreement by reference.
6. No inference in favor of or against any party shall be drawn from the fact that such party or such party's counsel has drafted any portion hereof.
7. All references in this agreement to a separate instrument are to such separate instrument as the same may be amended or supplemented from time to time pursuant to the applicable provisions thereof.

F. **Construction Manager - Multiple Trade Contracts**: If indicated in the Advertisement for Bids, the City has elected to engage the services of a Construction Manager for the work on this Project. If so, the same will be indicated in the bid packages and special supplemental conditions will be attached in regard to trade contracts. Contractor, as one of the multiple trade contractors on the Project shall adhere to all terms and conditions of the contract documents, particularly the supplemental conditions regarding multiple trade or multiple prime contractors. Any provision of the general conditions in direct conflict with the supplemental conditions is superseded to the extent of the conflict. If using a Construction Manager format, then this shall be a multiple trade or multiple prime contract agreement subject to the supervision and direction of a Construction Manager, in accordance with the terms and provisions of the Construction Manager's agreement with the City, which agreement is adopted herein by reference.

G. **Coordination of Plans, Specifications, etc.:** The specifications, the plans, drawings and all supplementary documents are essential parts of the Contract, and requirements occurring in one are as binding as though occurring in all. They are intended to be comprehensive to describe and provide a complete work. In case of discrepancy, figured dimensions shall govern.

H. **Corrections of Plans, etc.:** Should any portions of the plans, specifications or drawings be obscure or in dispute, they shall be referred to the Engineer/Architect and he shall decide as to the true meaning and intent. The Engineer/Architect shall also have the right to correct any errors or omissions at any time when such corrections are necessary for the proper fulfillment of said plans and specifications.

I. **Taxes and Charges:** Except to the extent the City and the Contractor are utilizing a "Purchasing Agent Appointment agreement," Contractor shall withhold and pay all sales and use taxes and all withholding taxes, whether local, state or federal and pay all Social Security taxes and also all State Unemployment Compensation taxes, and pay or cause to be withheld, as the case may be, any and all taxes, charges, or fees or sums whatsoever,

which are now or may hereafter be required to be paid or withheld under any laws. Pursuant to Ala. Code §39-1-3 (1975), Contractor shall be reimbursed for any additional severance, sales or uses taxes incurred as a result of an increase in such taxes during performance of the contract.

J. **Shop Drawings and Submittals.** The Contractor shall submit shop drawings, samples and submittals depicting or representing the construction of portions of the Project in accordance with the plans and specifications to the Engineer/Architect and if there is no Engineer or Architect on the Project, to the City representative. The Contractor shall pay for or the cost may be withheld from payments to the Contractor for more than two (2) reviews of the shop drawings, samples or submittals or similar element of work by the Engineer, Architect or City representative.

K. **Alabama Immigration Law.** By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom, to the extent allowed by Federal law.

L. **Compliance with Affordable Health Care Act.** By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal compliance laws pertaining to the Affordable Health Care Act. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom, to the extent allowed by Federal law.

ARTICLE II. PAYMENTS, CLAIMS AND CHARGES, ETC.

A. **Contract Price:** The City will pay and the Contractor will accept in full consideration for the performance of the work/Project, subject to additions and deductions (including but not limited to liquidated damages) as provided in the contract documents and herein, the sum of (UNIT PRICE BID SCHEDULE – SEE BID SCHEDULE) ($_____) and/or in unit prices as shown in Bidder's schedule for the base bid amount of $ 2,231,786.77, being the amount of the Contractor's bid as awarded by the City.

B. **Estimated Quantities and Unit Prices:** If award was made in whole or in part based upon unit prices, the Contractor agrees that the prices given in the Proposal are unit prices. The estimated quantities as stated in the Advertisement for Bids and in the Proposal and as indicated on the plans or in other places are approximate only, are subject either to increase or decrease and are only for the purpose of comparing on uniform basis the bids offered for the Project under this contract. The Contractor further agrees that should the quantities of any of the items of the work be increased, he will do the additional work at the unit prices set out in the Proposal and should the quantities be decreased, payment will be made on actual quantities at the unit prices and he will make no claim for anticipated profits for any decrease in the quantities. Actual quantities will be determined upon completion of the Project.

C. **Overtime Work by Contractor:** If the Contractor for his convenience and at his own expense should desire to carry on his work at night or outside regular hours, he shall submit written notice to the Engineer/Architect and he shall allow ample time for satisfactory arrangements to be made for inspecting the work in progress. At no time shall the notice be given less than 24 hours before such overtime work is started. The Contractor must obtain, through the Engineer/Architect, the City's approval for work at night, on Saturdays, Sundays or legal holidays. The Contractor shall light the different parts of the Project as required to comply with all applicable federal and state regulations and with all applicable requirements of the City.

Overtime hours shall be considered any hours worked by the Contractor on Saturday, Sunday and legal holidays, which in the Engineer/Architect's opinion requires the Engineer/Architect's resident observers' presence to observe such overtime work. Overtime hours requiring the presence of City inspectors shall be considered any hours worked by the Contractor in excess of eight (8) hours during any working day and/or in excess of forty (40) hours from Monday through Friday and/or any time on Saturday, Sunday or legal holiday. In general, it should be expected that the Engineer/Architect's resident observer(s) or City's inspectors will be present at all times that the Contractor is working.

If the Contractor elects to schedule and perform overtime work, the Contractor shall pay the City for the City's resident inspector's salary plus costs for each hour of overtime work. Overtime shall be rounded up to the nearest whole hour. This amount shall include the inspector's salary at overtime rate, labor additive, which includes insurance, social security, workmen's compensation, sick pay, paid holidays, vacation pay and his vehicle and equipment. Payment to the City shall be made by a deduction from the Contractor's monthly payment invoice for any overtime worked.

D. **Payments on Account/Payments Withheld/Retainage:** Upon presentation of a verified application for payment, which shall include a "Contractor's Affidavit of Payment of Debts and Claims," AIA Form G706 or equivalent, then usually by the fifteenth (15th) day of each calendar month or as soon thereafter as is practical, as the Project progresses, the City shall make partial payments to the Contractor of the billable work performed less payments already made and less deductions for any incomplete, unaccepted or defective work. In making partial payments to the Contractor, there shall be retained five (5%) percent of the estimated amount of work done and value of materials stored on the site or suitably stored and insured off-site. Provided; however, after fifty (50%) percent of the Project has been satisfactorily completed, no further retainage will be withheld.

Retainage shall be held until final completion and acceptance of all work covered by the Contract Documents unless escrow or deposit arrangements are agreed to by the City. When maintenance periods are included in the Contract Documents covering highways, bridges or similar structures, such period shall be considered a component part of the contract and retainage will be held until the expiration of such periods.

On completion and acceptance of each separate building, public work or other separately identifiable and complete division of the Project in regard to which a separate price has been stated in the Contract Documents or can be separately ascertained, payment may be made in full including retainage but less deductions. Provided; however, the City will not consider making such payment on any such item of work if it is an integral part of a complete project.

All materials and work covered by partial payments as provided for herein shall become the sole property of the City; provided, however, the Contractor shall not be relieved from the sole responsibility for the care and protection of materials and work upon which payments have been made and for the restoration of any damaged work.

The City may also withhold from time to time from payment to the Contractor such an amount or amounts as may be necessary to pay and fully satisfy all claims and demands for labor and services rendered in and about the Project, including any such amount or amounts due to be paid to or by any subcontractor or supplier, amounts for City's or Engineer/Architect's observers or inspectors for contractors' overtime as herein provided, or for engineering or design services associated with Contractor initiated change orders or submittals in excess of that permitted herein. The Contractor hereby authorizes the City as its agent, to apply such amounts so withheld to the payment of any amount so due to be paid and all other just and lawful claims other than claims for damages for tort. In case of disagreement with reference to any such claim or claims, the City may keep such amounts so withheld on account of such claim or claims until such disagreement is finally settled and determined.

In addition, the City may also withhold payment of the whole or any part of a verified or approved application for payment from the Contractor to such an extent as may be necessary to protect itself from loss on account of any of the following causes discovered subsequent to its verification or approvals:

1. Defective work.
2. Evidence indicating probable filing of claims by other parties against the Contractor.
3. Failure of the Contractor or subcontractor to promptly make payments to subcontractors or for materials, labor, food stuffs and supplies.
4. Damage to another contractor under separate contract with the City.
5. Assessment of liquidated damages.

When the above grounds are removed, applications for payment will then be verified and/or approved for amounts not previously verified and approved because of them.

The Contractor shall not attempt to withdraw at any time during the term of this contract or any extensions thereof, without the expressed written consent of the City, the whole or any part of the amounts so retained by the City from payments due the Contractor by the establishment of an escrow account or by depositing securities in lieu thereof, pursuant to Ala. Code §39-2-12(e) or (f), or any amendments thereto or any equivalent law, ordinance or regulation. It is expressly agreed between the parties hereto that should the City elect not to consent to the same, then the Contractor shall not elect to, attempt to or in any manner endeavor to withdraw such retained amounts.

E. **Claims for Extra Cost:** If the Contractor claims that any instructions by drawings or otherwise involve extra cost or any extension of time, he shall notify the City in writing within ten (10) days after the receipt of such instructions and in any event before proceeding to execute the Project. Thereafter, the procedure shall be the same as that for change orders. No such claim shall be valid unless made in accordance with the terms of this section. There shall be no damages for delay.

Except as otherwise herein provided, no charge for any extra work will be allowed unless the same has been duly authorized in writing by the City and the price stated in such order.

F. **Differing Site Conditions:** If, in the performance of the Contract, subsurface or latent conditions are found to be materially different from those indicated by the plans and specifications, or unknown conditions of an unusual nature are disclosed differing materially from conditions usually inherent in work of the character shown and specified, the Contractor shall immediately notify the Engineer/Architect in writing regarding such conditions but in no event later than forty-eight (48) hours after discovery of such conditions by the Contractor.

The written notice shall describe the conditions, and other pertinent information, in no event shall such notice be later than forty-eight (48) hours before such conditions are disturbed. Upon such notice, or upon such observation of conditions, the Engineer/Architect will promptly make such changes in the plans and/or Specifications as he finds necessary (if any are necessary) to conform to the different conditions, and any increase or decrease in the cost of the Project resulting from such changes may be adjusted as provided under Change Orders or Claims for Extra Cost as set forth in the Contract documents.

G. **Change Orders:** Change orders shall be allowed only under the following conditions: 1) Minor changes for a total monetary amount less than that required for competitive bidding; or 2) Changes for matters incidental to the original contract necessitated by unforeseeable circumstances arising in the course of work under the contract; or 3) Changes due to emergencies; or, 4) Changes provided for in the original bidding and original Contract Documents as alternates; 5) Changes of relatively minor items not contemplated when the plans and specifications were prepared and the Project was bid and which are in the public interest and generally do not exceed 10 percent of the Contract Price, subject to Alabama Bid Law exceptions.

The Contractor or successful bidder is expected to complete the Project as bid and specified within the financial parameters stated therein. However, if it shall be determined that a change order condition possibly exists in any given case during the performance of the contract, the Contractor shall promptly notify in writing the representative of the City and shall not implement such change until having notified the representative of the City. If the change is minor in the opinion of the representative of the City and does not involve, 1) an adjustment in the contract sum or construction bid price, or 2) result in extension of the contract time, or 3) a material change in the contract scope of services, then the City representative may authorize the change in writing to the Contractor. The Contractor shall not perform such change until receipt of such written change order.

In the event the change order requested by the Contractor involves, 1) an increase in the contract sum or construction bid price, 2) extend the contract time, or 3) materially change the Contractor's scope of work or services, then the Contractor shall request a change order in writing and present the same to the City representative. The representative of the City, shall determine whether this is a change order which can be allowed and, if so, what exception it would fall under. The representative of the City shall then document the same, attach the same to the Contractor's request for a change order and submit the same with his recommendation to the City Council at its next or any subsequent regularly scheduled Council meeting for approval.

The City reserves the right to institute change orders as the Owner pursuant to the aforesaid terms and conditions.

In no event is a change order to be executed by the Contractor prior to approval thereof by the City, except for emergencies.

H. **Determination of Adjustment of the Contract Sum:** The adjustment of the Contract Sum resulting from a change in the Work shall be determined by one of the following methods as determined by Owner:

1. By mutual agreement to a lump sum based on or negotiated from an itemized cost proposal from the Contractor.
2. Additions to the Contract Sum shall include the Contractor's direct costs plus a maximum 15% markup for overhead and profit. Where subcontract work is involved, the total mark-up for the Contractor and a subcontractor shall not exceed 25%. No allowance for overhead and profit shall be figured on a change which involves a net credit to the Owner. For the purposes of this method of determining an adjustment of the Contract Sum, "overhead" shall cover the Contractor's indirect costs of the change, such as the cost of bonds, superintendent and other job office personnel, watchman, job office, job office supplies and expenses, temporary facilities and utilities, and home office expenses.

I. **Construction Schedule and Periodical Estimates:** Immediately after execution and delivery of the contract and before the first partial payment is made, the Contractor shall deliver to the City and Engineer/Architect and Construction Manager, a construction schedule in a form satisfactory to the City or Construction Manager, which may include CPM for all major trades, showing the proposed dates of commencement and completion of each of the various activities, of work required under the Contract documents, the interrelationship of each activity, sequences, resources for each and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the progress schedule. The Contractor shall also furnish (1) a detailed estimate giving a complete breakdown on the contract price and (2) periodical itemized estimates of the work done for the purpose of making partial payments, however the same will not be considered as fixing a basis for additions to or deductions from the contract price. Scheduling is particularly critical if Contractor is a trade contractor and adherence to the Construction Manager progress schedule is required.

NOTE: Depending upon the complexity of the work the City may require CPM or equivalent meeting all criteria above.

J. **Sales and Use Tax Savings:** Pursuant to the invitation for bids, sales and use taxes are not to be included in the bid. The project will be administered in compliance with the State of Alabama Act 2013-205, Certificate of Exemption from Sales and Use Tax for Governmental Entities, regarding sales and use taxes. The Contractor shall be responsible for obtaining a certificate of exemption from the Alabama Department of Revenue for purchases of materials and other tangible property made part of the project. Any subcontractors purchasing materials or other tangible personal property as part of the project shall also be responsible for obtaining a certificate of exemption. The estimate sales and use tax saving must be accounted for on the bid proposal. Failure to provide the estimated sales and use tax savings may render the bid as non-responsive. Other than determining responsiveness of the bid, sales and use tax accounting shall not affect the bid pricing nor shall be considered in the determination of the lowest responsible and responsive bidder

ARTICLE III. TIME

A. **Time for Completion/Delays:** The Contractor hereby agrees to commence work under this contract on the date to be specified in a written "Notice to Proceed" of the Engineer/Architect or thirty (30) days from the date of contract execution if no notice is issued, and to fully complete the Project within 210 consecutive calendar days thereafter. If this is a trade contract, then the Contractor shall perform within the time periods and at the times as established by the Construction Manager's approved construction schedule for the project. The Contractor further agrees to pay to the City, liquidated damages for each consecutive calendar day thereafter as hereinafter provided. Time is of the essence and a material element to this agreement.

NOTE: When maintenance periods are included in the contract for highways, bridges or similar structures, such periods shall be considered component parts of the contract. To the extent the construction schedule contains "float," the parties agree that the same belongs to the Project and may be utilized by either party.

Delay: If the Contractor is delayed at any time in the progress of work by any of the following causes, the Contractor may be entitled to a reasonable extension of time as determined by the City in which to complete the Project. Provided, however, no such delay nor the extension of time if granted shall be grounds for a claim by the Contractor for damages or for additional cost, expenses, overhead or profit or other compensation:

1. Fires, abnormal floods, tornadoes or other cataclysmic phenomenon of nature.
2. Strikes, embargoes, lockouts, war, acts of public enemy.
3. Change orders.
4. Acts of performance or delays in performance by other contractors employed by the City or their subcontractors.
5. Causes beyond the control of the Contractor.

Provided further, that the Contractor shall immediately give notice in writing to the City and follow extension of time procedures as provided for herein. The City expressly disclaims any liability to Contractor for any cost, expense or damage caused by other contractors, subcontractors or suppliers, including those engaged by the City. The City shall not be liable for damages or cost to the Contractor sustained due to any interference from utilities or appurtenances or from the operations of relocating the same.

B. **Extensions of Time:** All written requests for extensions of time must be submitted to Engineer/Architect within ten (10) days after the occurrence of the cause for delay. The Engineer/Architect shall ascertain the facts and the extent of the delay and shall recommend to the City Council whether it should extend the time for completing the Project. Any extension of time shall be in writing and processed as a change order.

For change orders requesting extensions of time due to rain, wind, flood or other natural phenomenon, the Contractor's written request must be accompanied, at the City's request, by a detailed report of weather at this site

for the last ten (10) years with averages showing means and statistical deviations from mean averages to support request for extension.

No extension shall be made for delays due to rain, wind, flood or other natural phenomenon of normal intensity for the locality.

In the event any material changes, alterations, or additions are made as herein specified, which in the opinion of the Engineer/Architect will require additional time for execution of any work under the contract, then in that case, the time of the completion of the Project may be extended through change order. No extensions of time shall be given for any minor changes, alterations or additions. The Contractor shall not be entitled to any reparation or compensation on account of such additional time or extensions of time. To the extent that the construction schedule contains "float," the parties agree that the same belongs to the Project and may be utilized by either party.

C. **Right of the City to Terminate Contract:** If the Contractor should be adjudged as bankrupt, or if it should make a general assignment for the benefit of its creditors, or if a receiver should be appointed for the Contractor or any of its property, or if it should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or if it should refuse or fail to make prompt payment to persons supplying labor for the Project under the Contract, or persistently disregard instructions of the Engineer/Architect or fail to observe or perform any provisions of the Contract documents, or fail or neglect to promptly prosecute or perform the Project in accordance with the contract documents or otherwise be guilty of a substantial violation of any provision of the Contract documents, then the City may, on giving at least thirty (30) days' written notice to the Contractor, without prejudice to any other rights or remedies of the City in the premises, terminate the Contractor's right to proceed with the Project. In such event, the City may take over the Project and prosecute the same to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any and all excess cost occasioned to the City thereby, including attorney's fees; and in any such case, the City may take possession of and utilize in completing the Project such appliances and plant of the Contractor or its subcontractors as may be on the site work and necessary or useful thereof. In the event of termination, the same shall not relieve the Contractor nor any of its sureties of their obligation pursuant to this agreement. In the event it becomes necessary for the City to maintain any legal action against the contractor, to enforce its rights herein, the Contractor shall pay the City all expenses associated therewith including a reasonable attorney's fee.

Owner may at any time and for any reason terminate Contractor's services and work at Owner's convenience. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement. Upon such termination, Contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this Agreement; plus, (2) such other costs actually incurred by Contractor as are permitted by the prime contract and approved by Owner; (3) plus ten percent (10%) of the cost of the work referred to in subparagraph (1) above for overhead and profit.

D. **Liquidated Damages:** Should the work under this contract not be completed within the time specified, scheduled or as extended, it is understood and agreed that there may be deducted by the City or Engineer/Architect from the partial and/or final payments to the Contractor or otherwise charged to the Contractor, a sum computed at the rate of Five Hundred Dollars ($500.00) per day beginning from the stated or extended date of completion and continuing for so long as the Project remains incomplete. It is understood and agreed that the above deduction is not a penalty, but money due to reimburse the City/Owner for inconvenience and damage to the general public, due to the delay in the completion of the Project and is reasonable. The collection of liquidated damages by the City shall not constitute an election or waiver by the City of recovery of additional delay or non-delay related damages from the Contractor, and the City expressly reserves the right to recover actual damages for other harms resulting

from delay. The provisions of the liquidated damage clause shall apply and continue to apply even if the Contractor terminates or abandons the Project prior to the scheduled completion dates.

The amounts of such liquidated damages and actual damages incurred by reason of failure to complete the work stipulated in the Contract are hereby agreed upon as reasonable estimates of the costs which may be accrued by the City. It is expressly understood and agreed that these amounts are not to be considered in the nature of penalties, but as damages which have accrued against the Contractor. The City shall have the right to deduct such damages from any amount due, or that may become due the Contractor, or the amount of such damages shall be due and collectible from the Contractor or Surety.

ARTICLE IV. WORK AND MATERIALS

A. **Cooperation of Contractor:** The Contractor shall have available on the job site, at all times, at least one (1) copy of the plans and specifications if prepared for the Project.

He shall give the Project the constant attention necessary to facilitate the progress thereof and shall cooperate with the City, Engineer/Architect and with other Contractors in every way possible. The Contractor shall at all times have a superintendent, capable of acting as his agent on the Project, who shall receive communications from the Engineer/Architect or his authorized representatives or the City's authorized representative. The superintendent shall have full authority to give and execute orders relating to the Project without delay and to promptly supply such tools, plant equipment, materials and labor as may be required.

The City reserves the right to utilize its own forces on the site or those of another contractor and to communicate through its representative directly with the Contractor.

B. **Coordination - Trade Contractors:** If the supplemental conditions are attached to these general conditions indicating that this Project involves the use of multiple trade or multiple prime contractors under the supervision and direction of a Construction Manager employed by the City, then each such trade contractor shall cooperate and coordinate its construction activities and operations with those of other trade contractors and other entities involved in the Project and included under different sections of the specifications that are dependent upon each other in any manner for proper and correct installation, connection and operation, to assure efficient, prompt, orderly and proper installation of each part of the Project.

When utilizing trade contractors and/or multiple prime contractors under the supervision of Construction Manager cooperation and coordination of activities is extremely important. Refer to the provisions of the supplemental conditions for detailed requirements.

C. **Superintendence:** The Contractor shall assign to and keep at the Project site competent supervisory personnel. The Contractor shall designate, in writing, before starting work, an authorized representative who shall be an employee of the Contractor and shall have complete authority to represent, to receive notice for, and to act for the Contractor. The Contractor shall not permit or allow any work to be conducted upon the Project site without the presence of supervisory personnel. The Engineer/Architect shall be notified in writing prior to any change in superintendent assignment. Using his best skill and attention, the Contractor shall give efficient supervision to the Project. The Contractor shall be solely responsible for all construction means, methods, techniques, and procedures, for providing adequate safety precautions, and for coordinating all portions of the Project under the Contract. It is specifically understood and agreed that neither the Engineer/Architect nor the City shall not have control or charge of and shall not be responsible for the construction means, methods, techniques, or procedures, or for providing adequate safety precautions in connection with the Project under the Contract.

D. **Contractor's Tools and Equipment:** The Contractor's tools and equipment used on the Project shall be furnished in sufficient quantity and of a capacity and type that will adequately and safely perform the work specified, and shall be maintained and used in a manner that will not create a hazard to persons or property, or cause a delay in the progress of the Project.

E. **Furnishing Labor and Equipment:** The Contractor shall furnish and pay for all equipment, labor and supervision, and all such materials as required to be furnished in the Notice to Bidders and as may other-wise be necessary to the completion of the Project and the operation of each construction crew required.

F. **Employees:** The Contractor shall employ only competent, skillful workers on the Project, and whenever any person shall appear to be incompetent or to act in a disorderly, unsafe improper manner, such person shall promptly be removed from the Project by the Contractor.

G. **Materials and Appliances:** Unless otherwise stipulated, the Contractor shall provide and pay for all other materials, water, heating, lighting, fuel, power, transportation, machinery, appliances, telephone, sanitary facilities, temporary facilities and other facilities and incidentals necessary for the execution and completion of the Project.

The Contractor warrants to the City and the Engineer/Architect that, unless otherwise specified, all materials and equipment furnished under this contract shall be new, and both workmanship and materials shall be of good quality, free of faults and defects, and in conformance with the Contract Documents. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials. In selecting and/or approving equipment for installation in the Project, neither the City nor Engineer/Architect assume responsibility for injury or claims resulting from failure of the equipment to comply with applicable federal, state, and local safety codes or requirements, or the safety requirements of a recognized agency, or failure due to faulty design concepts, or defective workmanship and materials. Material and/or equipment damaged by flooding or other causes during the construction period shall be subject to rejection by the Engineer/Architect; reconditioning and/or repairing material and/or equipment is not acceptable.

H. **Asbestos and Hazardous Materials:** Unless specifically authorized and instructed to the contrary by the City, the Contractor shall not permit, allow, place, install or incorporate into the Project or upon the work site, any hazardous material(s), including, but not limited to, any products or materials that contain asbestos in any quantity. It shall be the responsibility of the Contractor to inspect all materials and products delivered for incorporation or installation in the Project to ensure that they contain no hazardous materials or asbestos. Where the Contractor or any subcontractor has or should have a reasonable suspicion that any product or material contains asbestos or other hazardous material, the Contractor shall immediately inspect the material or product, obtain a product or material data sheet, and notify the City's representative prior to installation or incorporation of the same into the Project. Any product or material determined to contain asbestos or other hazardous material shall be removed from the Project immediately and properly disposed of as required by law. Products or material to which the contractor should pay particular attention to avoid the presence of asbestos incorporated therein include, but are not limited to the following: concrete, batt insulation, roof insulation, building felts, mastics, water proofing products, adhesives, resilient flooring products, ceiling tiles, interior coatings, exterior coatings, roofing, pipe installation, duct installation and pre-assembled items of equipment.

At the completion of the Project, the Contractor shall submit a duly executed Asbestos Affidavit in the form as attached hereto prior to final payment.

The Contractor is responsible for insuring that all of its employees and subcontractors are adequately trained to handle hazardous materials in accordance with 49 CFR §172(g).

I. **Protection of Work and Property:** The Contractor shall furnish and install all necessary temporary works for the protection of the Project. The Contractor shall at all times adequately maintain, guard and protect his own work from damage, and safely guard and protect private, commercial, industrial, the City's and others' property from injury or loss arising in connection with this Contract. He shall make good any such damage, injury or loss, except such as may be directly due to errors in the plans or specifications or caused by agents or employees of the City.

The Contractor shall protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site which are not required to be removed or do not unreasonably interfere with construction, as may be determined by the Engineer/Architect, and be responsible for all cutting or damaging of trees and shrubs or grassed areas, including damage due to careless operation of equipment, stockpiling of materials or equipment.

Care shall be taken by the Contractor in felling trees that are to be removed to avoid any unnecessary damage to vegetation or other trees that are to remain in place. Any limbs or branches unavoidably broken during such operations shall be trimmed with a clean cut and painted with an approved tree priming compound. The Contractor may be required to replace or restore at his own expense all vegetation not protected and preserved, as above required, that may be destroyed or damaged.

The Contractor shall provide and maintain all passageways, guard fences, lights, and other facilities required for protection by federal, state or municipal laws and regulations or local conditions.

The Contractor shall comply with local and state regulations governing the operation of premises which are occupied and shall perform the contract in such a manner as not to interrupt or interfere with the operation of other facilities.

The Contractor shall store his apparatus, materials, supplies, and equipment in such orderly fashion at the site of the Project as will not unduly interfere with the progress of his work or the work of any other contractor.

Necessary crossings of curbings, sidewalks, roadways or parkways shall be protected against damage and any damage shall be repaired by or at the expense of the Contractor.

The Contractor shall not place upon the Project or any part thereof, loads inconsistent with the design or safety of that portion of the Project.

The Contractor shall provide and maintain access to all public and private properties at all times and be responsible for any damage caused by his operation to existing driveways, yards, streets, parking lots, utilities, railroads, etc., and such damage shall be corrected at the Contractor's expense. Roadways authorized closed by State or Local authorities shall be maintained to provide access to all fire, police, and other emergency vehicles and all individuals having private property in the closed area. The Contractor shall notify at least 24 hours in advance the Fire, Police, and Transportation Departments having local jurisdiction, the Owner and any other individuals, businesses, or agencies that may be affected.

J. **Protection of Existing Utilities**. Contractor shall be responsible for any damage to existing structures or the interruption of any utility services which shall be repaired or restored promptly by and at the expense of the Contractor.

To that extent, the Contractor shall provide whatever measures are necessary to properly protect and maintain all existing utilities encountered in the course of the work. The Contractor shall be exclusively responsible to the utility owner for any and all damages to the various utilities caused by the Contractor's actions or lack of actions to adequately protect the same.

The Contractor shall determine the exact location of all existing utilities before commencing work and agrees hereby to be fully responsible and liable for any and all damages which might occur by his failure to exactly locate and/or preserve the location of any and all underground or overhead utilities. The Contractor shall be solely and directly responsible to the utility owner for any and all damages to the various utilities, caused by the Contractor's actions or lack of actions to adequately protect such utilities. If any utilities are to be affected during the course of construction, the Contractor shall so notify the owners thereof at least seventy-two (72) hours prior to any such construction activity. The Contractor shall fully cooperate and coordinate with all utility owners in the event of an interruption to any utility service. The cost for locating, uncovering and protecting underground and/or overhead utilities is included within the Contractor's bid price for various other items of work.

The Contractor shall maintain all storm sewers, drains and/or ditches so that flow is not disturbed or impeded. The Contractor shall protect storm drains, inlets and/or ditches, lawns, landscaping and other facilities, from damage during the testing, and flushing.

K. **Limiting Exposures:** The Contractor shall prosecute the work on the Project to insure that no part of the construction, complete or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to the following:

Excessive static or dynamic loading	Rodent and insect infestation
Excessive internal or external pressures	Combustion
Excessively high or low temperatures	Electrical Current
Thermal shock	High speed operation
Excessively high or low humidity	Improper lubrication
Air contamination or pollution	Unusual wear or other misuse
Water or ice	Contact between incompatible materials
Solvents	Destructive Testing
Chemicals	Misalignment
Light	Excessive weathering
Puncture	Unprotected storage
Abrasions	Improper shipping or handling
Heavy traffic	Theft
Soiling, staining and corrosion	Vandalism
Bacteria	

The Contractor shall minimize dust and air pollution through the use of water or other devices, require the use of properly operating combustion emission control devices and by encouraging the shutdown of construction vehicles when not in use.

L. **Safety:** The completed Project shall include all necessary permanent safety devices, such as machinery guards and similar ordinary safety items as may be appropriate or required by law. Further, any feature of the Project (including City-furnished or City-selected equipment) subject to such safety regulations shall be fabricated, furnished, and installed in compliance with these requirements. Contractors and manufacturers of equipment shall be held responsible for compliance with the requirements included herein. Contractors shall notify all equipment suppliers and subcontractors of the provisions of this Article.

In selecting and/or accepting equipment for installation in the Project, neither the City nor Engineer/Architect assume responsibility for any personal injury, property damage, or any other damages or claims resulting from failure of the equipment to comply with applicable safety codes or requirements, or the safety requirements of a recognized agency, or failure due to manufacturer's faulty design concepts, or defective

workmanship and materials. The Contractor shall indemnify and hold the City, Program Coordinator, and Engineer/Architect harmless against any and all liability, claims, suits, damages, costs, or expenses without limitation arising out of the installation or use of such equipment.

The Contractor shall take all necessary precautions for the safety of employees on the Project and shall comply with all applicable provisions of federal, state, and municipal safety laws and building codes to prevent accidents or injury to persons on or about or adjacent to the premises where the Project is being performed. He shall erect and properly maintain at all times, as required by conditions, and progress of the Project, all necessary safeguards for the protection of workmen and the public, and shall post danger signs warning against the hazards created by features of construction and the site.

Machinery, equipment and all hazards shall be guarded or eliminated in accordance with the State Accident Prevention in Construction provisions to the extent that such provisions are not in contravention with applicable laws.

The Contractor shall do whatever work is necessary for safety and be solely and completely responsible for conditions of the jobsite, including safety of all persons (including but by no means limited to the public, site personnel, visitors, or employees) and property during the Contract period. The contract period shall include any subsequent warranty or other period associated with Project deficiency or repair and all hours including, and in addition to, normal working hours.

Safety provisions shall conform to the Federal and State Departments of Labor and the Occupational Safety and Health Act (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, the requirements set forth herein, and any regulations that may be specified in other parts of these Contract Documents. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.

The Contractor shall at all times provide proper facilities for safe access to the work by authorized government officials (federal, state, county and local) and representatives of the Owner.

M. **Traffic Control:** The Contractor shall be responsible for traffic control, including plan and devices to the extent the same is required due to work in, upon or in proximity to public right-of-way, streets, roads or vehicular traffic. The traffic control plan and all traffic control devices shall conform at a minimum to the Manual on Uniform Traffic Control Devices for Streets and Highways, Latest Edition, Federal Highway Administration. A copy of which is on file in the office of the City of Tuscaloosa Director of the Department of Transportation for examination. Copies may be obtained from the Alabama Department of Transportation. Should the appropriate public authority determine a greater degree of traffic control is required, then the Contractor shall promptly provide same. The Contractor shall submit a plan to the City Engineer for approval before commencing construction.

Reasonable means of ingress and egress by vehicular and/or pedestrian traffic to property adjacent to the Project shall be maintained at all times. The Contractor shall indemnify and hold the City harmless for any claims or causes of action including but not limited to those for inverse condemnation and/or lost profits arising out of or in any manner associated with access to or the restriction or prevention thereof to adjoining property. Traffic control and erosion control is of paramount importance during the construction of this Project and the terms and conditions in the contract documents in regard to these matters must be strictly adhered to.

N. **Responsibility to Act in Emergency:** In case of an emergency which threatens loss or damage to property, and/or safety, the Contractor shall act, without previous instructions from the City or Engineer/Architect, as the situation may warrant. The Contractor shall notify the Engineer/Architect thereof immediately thereafter. Any claim for compensation by the Contractor, together with substantiating documents in regard to expense, shall be

submitted to the City through the Engineer/Architect. The claim will be handled in accordance with the provisions for extra work. However, if the emergency is created or aggravated by the Contractor, he shall be liable for the resulting damages. If the Contractor fails to take necessary action as required by such an emergency, the City may assign another Contractor or use his own forces to perform the emergency work. Costs or damages arising from the failure of the Contractor to act in an emergency may be deducted from the Contractor's request for payment.

O. **Sanitary Regulations:** The Contractor shall provide and maintain such sanitary accommodations for the use of his employees and those of his subcontractors as may be necessary to comply with the requirements and regulations of the local and State Department of Health. At a minimum, necessary sanitary conveniences for the use of the laborers on the work shall be erected and maintained by the Contractor, in such a manner and at such points as shall be approved by the Engineer/Architect. Their use shall be strictly enforced. In the Construction Manager format, the City may provide sanitary accommodations through the Construction Manager.

P. **Cutting, Patching, etc.:** Unless otherwise stated in the contract documents, the Contractor shall do all necessary cutting, fitting and patching of the Project that may be required to properly receive the work, to make its several parts join together properly, receive and provide for the work of various trades, and be received by the work of other contractors, or as required by drawings and specifications to complete the Project. After such cutting, he shall replace or restore or repair and make good all defective or patched work as required by the Engineer/Architect. He shall not cut, excavate or otherwise alter any work in any manner or by a method or methods that will endanger the Project, adjacent property, workmen, the public or the work of any other contractor. The Contractor shall check the location of all sleeves, openings, slots, etc., for the piping, ducts, breeching, conduits, louvers, grills, fans, etc., as they are laid out on the job.

Provisions for openings, holes and clearances through walls, beams, floors, ceilings and partitions shall be made and checked by the Contractor and/or his subcontractor in advance of constructing such parts of the Project and unnecessary, superfluous or dangerous cutting shall be avoided.

Pipes passing through concrete or masonry walls shall be protected by pipe sleeves two sizes larger than the pipe, plus its installation to provide free movement.

Under no condition shall structural, framing or other parts or members subjected to computed stress be cut or disturbed without the approval of the Engineer/Architect. Any plates, studs or joists, and/or rafters that are approved to be cut to execute necessary work shall be securely strapped and braced to restore their strength by approved methods.

Unless otherwise indicated in Supplemental Conditions, all road crossings and/or driveways cut by the Contractor during the performance of the Project shall be returned to service as soon as possible and replaced or repaired within seven (7) calendar days.

All major thoroughfares must be repaired the same day as cut. The Contractor shall be responsible for the safety and welfare of the traveling public while construction work is being done and until the City accepts the Project.

The Contractor will replace at his own expense, all pipe and accessories that may be broken, damaged, stolen or lost and all materials that may become damaged, lost, stolen or misused.

The Engineer/Architect's approval shall be obtained before cutting or drilling holes in concrete or masonry that tend to damage or weaken the load capacity.

Q. **Trailers:** With the approval of the City or Engineer/Architect, the Contractor may park trailers or other structures for housing men, tools, machinery and supplies, but they will be permitted only at approved places and

their surroundings shall be maintained at all times in a sanitary and satisfactory manner by the Contractor. On or before the completion of the Project, all such trailers or structures shall be removed, unless the City authorizes their abandonment without removal, together with all rubbish and trash, at the expense of the Contractor.

R. **Construction Staking:** If necessary, the Engineer or the City will furnish initial lines and grades to establish the initial horizontal and vertical control points and define the beginning and ending points of the Project. The Contractor is responsible for engaging the services of a qualified Engineer or land surveyor to replace and/or re-establish in accordance with the construction plans and/or specs, all construction stakes that are disturbed, displaced or destroyed during construction.

If the Contractor finds any errors or discrepancies with the construction staking or the criteria upon which it is based, he/she shall promptly notify the Owner's representative.

S. **Periodic Cleanup**: The Contractor shall periodically, at least weekly, or as requested during the progress of the Project, clean up and remove from the premises, all refuse, rubbish, scrap materials and debris caused by its employees or its subcontractors resulting from its work, to the end that all times the premises are sanitary, safe, reasonably clean, orderly and workmanlike. Trash and combustible materials shall not be allowed to accumulate inside buildings or elsewhere on the premises. At no time shall any rubbish be thrown from window openings, except during renovations with adequate precautions and into proper receptacles. The Contractor shall comply with all municipal litter and construction site ordinances.

Before the Project is considered as complete, all rubbish created by or in connection with the construction must be removed by the Contractor and the premises left in a condition by the Contractor satisfactory to the City. Street, curbs, crosswalks, pavements, sidewalks, fences and other public and private property disturbed shall be restored to their former condition or better, and final payment will be withheld until such work is finished by the Contractor.

Contractor shall conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws. No burning or burying of rubbish or waste materials is permitted on the Project site. The Contractor shall dispose of any hazardous material in a safe manner, off site, in accordance with applicable laws and regulations and shall not dispose of volatile or hazardous waste in storm or sanitary sewer drainage ditches, streams or waterways.

Contractor shall periodically wet down dry materials and rubbish to lay dust and prevent blowing dust; and shall provide adequate and approved containers for collection and disposal of waste material, debris and rubbish, removing grease, dust, dirt, stains, labels, fingerprints and other foreign materials from exposed and semi-exposed surfaces.

T. **Termite Control.** If the Project involves construction of a building or if otherwise specifically required by the City, then the Contractor shall provide soil treatment for termite control under all interior slabs on grade and foundation walls, and as herein specified. Contractor shall also comply with manufacturer's instructions and recommendations for work, including preparation of substrate and application and shall engage a professional pest control operator, licensed in accordance with regulations of governing authorities for application of soil treatment solution and doing business in the state where the Project is located for a minimum of five (5) years.

Contractor shall not apply soil treatment solution until excavating, filling and grading operations are completed, except as otherwise required in construction operations. To insure penetration, the soil treatment will not be applied to frozen or excessively wet soils or during inclement weather. Contractor shall comply with all handling and application instructions of the soil toxicant manufacturer. The type of materials to be used for soil poisoning shall first be submitted to the City for approval.

The soil treatment solution shall be an emulsible concentrate insecticide for dilution with water, specially formulated to prevent infestation by termites. Fuel oil will not be permitted as a dilutant.

Contractor shall strictly comply with the Environmental Protection Agency's (EPA) rules and regulations governing chemicals and their use. Only soil treatment solutions which are not injurious to planting shall be used. Other solutions may be used as recommended by Applicator when acceptable to the EPA, local governing authorities, and the Engineer/Architect.

Contractor shall comply with the following requirements when applying the soil treatment solution:

1. Surface Preparation: Remove foreign matter which could decrease effectiveness of treatment on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and foundations. Toxicants may be applied before placement of compacted fill under slabs if recommended by toxicant manufacturer.
2. Under slab-on-grade structures, treat soil before concrete slabs are placed using either power sprayer or tank type garden sprayer.
   (A) Apply 4-gallons of chemical solution per 10 linear feet to soil in critical areas under slab, including entire inside perimeter inside of foundation walls, along both sides at interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footings.
   (B) Apply one gallon of chemical solution per 10 sq. ft. as an overall treatment under slab and attached slab areas where fill is soil or unwashed gravel. Apply 1-1/2 gallons of chemical solution to areas where fill is washed gravel or other coarse absorbent material.
   (C) Apply 4 gallons of chemical solution per 10 linear feet of trench for each foot of depth from grade to footing, along outside edge of building. Dig a trench 6" to 8" wide along outside of foundation to a depth of not less than 12". Punch holes to top of footing at not more than 12" o.c. and apply chemical solution. Mix chemical solution with the soil as it is being replaced in trench.
3. Post signs in areas of application warning workers that soil poisoning has been applied. Remove signs when areas are covered by other construction.
4. Reapply soil treatment solution to areas disturbed by subsequent excavation or other construction activities following application.

U. Erosion Control.

1. To the extent there has been issued by the City Engineer a land development permit in accordance with applicable ordinances, the Contractor shall conform to and abide by all terms and conditions of such permit.
2. Erosion control measures shall be performed on all disturbed areas in accordance with the BMPP included in the Notice of Intent and with Section 665, Alabama Highway Department Specifications. The CONTRACTOR will perform all erosion control measures necessary to prevent silt and soil from leaving construction area and entering private property or the "Waters of the State." Erosion control measures shall be in strict accordance with Alabama Non Point Source Management Program Document and EPA Storm Water Pollution Prevention for Construction Activities.
3. In accordance with Section 665 of Alabama Highway Department Specifications, temporary erosion control work shall involve the construction of temporary berms, dikes, drains, fences, dams, etc. with the use of temporary seeding, mulching, erosion control netting, hay bales, sandbags, check dams, etc., as necessary in order to prevent silt and soil from leaving rights-of-way and entering private property or from washing into drainage structures located on State or

County rights-of-way. CONTRACTOR shall mow grassed areas as required during the construction phase of the contract.

4. Erosion control measures shall be maintained by the CONTRACTOR through the warranty period of the contract. If additional measures are required to correct problems which might occur, these shall be performed by the CONTRACTOR at no additional cost to the OWNER.

5. Materials used for erosion control measures shall be in accordance with Section 665.02 of Alabama Highway Department Specifications and shall include hay bales, sandbags, silt fencing rip rap, crushed stone, mulch or other materials necessary in order to accomplish erosion control.

V. **Wastewater Containment and Management Plan.** In accordance with ADEM Consent Order, NPDES permit NO. AL0022713, Tuscaloosa WWTP, Tuscaloosa County (125) dated September 8, 2009 and the "City of Tuscaloosa, Water and Sewer Department Engineering Report and Compliance Plan", December 2009; to the extent that construction activity by the Contractor involves any wastewater infrastructure or construction activities in close proximity to any wastewater infrastructure and/or to any City sanitary sewer assets the Contractor shall submit to the City Engineer, prior to commencing construction, a wastewater containment and management plan (the "Plan"). The Plan shall adequately address the means, methods and techniques to be employed by the Contractor for containing and transporting wastewater in a sanitary manner without, at any time, permitting the discharge of wastewater into the environment or creating the necessity of a State required sanitary sewer overflow report. The Plan shall be submitted by the Contractor to the Office of City Engineer for review and approval before commencing any construction activity. The City Engineer may waive the requirement of submitting a Plan if he/ she determines that the construction activity to which the Plan would relate does not involve any potential for the discharge of wastewater into the environment or creating the potential for the necessity of a State required sanitary sewer overflow report.

W. **Environmental Clause/Covenant.** Contractor shall not allow any toxic, hazardous or contaminated substances or gases (including, but not limited to, asbestos and raw materials which include hazardous constituents or any other similar substances or materials which are included under or regulated by any local, state, or federal law, rule or regulation pertaining to environmental regulations, contamination, clean-up or disclosure such as, without limitation, the Comprehensive Environmental Response Compensation and Liability Act of 1980 ("CERCLA"); the Clean Air Act (42 U.S.C. Sec. 7401 et seq.); the Clean Water Act (33 U.S.C. §1251 et seq.); the Resource Conservation and Recovery Act (42 U.S.C. §6901 et seq.); and the Toxic Substances Control Act (42 U.S.C. §2601 et seq.) or state environmental clean-up or disclosure acts and statutes as all such acts and statutes exist now or are hereafter amended (such acts and statutes referred to herein as "Environmental Laws")(such substances or gases referred to herein as 'Hazardous Substances') to be stored, located, or discharged on the premises without specific prior written consent of the City. Contractor shall comply with all Environmental Laws affecting the premises. Contractor covenants to hold the City, its officers, agents and employees harmless from and against any loss, costs, damage or expenses (including attorney's fees and expenses) arising out of the presence of Hazardous Substances (as hereinbefore described) on or about the premises or the violation of any Environmental Laws with respect thereto, the occurrence of which Hazardous Substances on the premises or the violation of any Environmental Laws shall have arisen solely from the acts or omissions of Contractor, its subcontractors, agents, invitees and employees. This indemnity shall survive the termination of this contract and shall inure to the benefit of the City of Tuscaloosa, its successors and assigns.

ARTICLE V. INSURANCE, LIABILITY, ETC.

A. Contractor's Insurance (Generally):

1. Insurance Required. The Contractor shall not commence work under this contract until it has obtained all insurance required by the Contract documents and such insurance has been accepted by the City. The Contractor shall maintain the required insurance during the term of the contract including any extensions of the term.

Insurance shall be written in comprehensive form by insurance companies rated A- or better by A. M. BEST and shall protect the Contractor and the City against claims for injuries to members of the public (including City employees) or damages to property of others (including City property) arising out of any act of the Contractor or any of its agents, employees or subcontractors and shall cover both on-site and off-site operations under this contract and insurance coverage shall extend to any motor vehicles or other related equipment, irrespective of whether the same is owned, non-owned or hired.

The obtaining and maintaining by Contractor and subcontractors of the insurance required herein does not relieve the Contractor of any responsibilities, obligations or duties to the City pursuant to this contract.

2. Additional Insurance. The Contractor shall have an insurance professional review the Contractor's activities in regard to the performance of this contract and the Contractor shall obtain any further or additional insurance or greater limits as recommended by the insurance professional.

3. Insurance Limits. Neither the setting of insurance limits or requirements nor the acceptance or approval of the same by the City imply or represent that the limits or the insurance carrier is sufficient or that such insurance actually has been obtained, that being the responsibility of the Contractor.

4. Subcontractors. The Contractor shall require all subcontractors to take out and maintain the type of insurance required herein to the extent of their involvement in the Project so as to be adequate to protect against liability. In the event any work under this Contract is performed by a subcontractor(s), the Contractor shall remain responsible for any liability directly or indirectly arising out of the work performed under this Contract, regardless of whether or not such work is covered by the subcontractor's insurance. The Contractor shall not allow any subcontractor to commence work on the project until all similar insurance required of the subcontractor has been obtained. All subcontractors shall maintain required insurance during the term of the contract including any extensions of the term.

5. City's Right to Review Coverage. The City shall have the right to inspect and approve Contractor's insurance coverage herein required. Should the City deem it advisable to modify the coverage in any way, it shall so request of the Contractor in writing and should the Contractor fail to modify the coverage, then the City may pay the cost of any increased coverage or take credit for any decreases as may be appropriate. Review or acceptance of insurance by the City or representatives of the City shall not relieve or decrease the responsibility of the Contractor hereunder.

6. Waiver of Subrogation. To the extent that the Contractor is required to maintain insurance coverage for loss or damage to property or bodily injury, including Builders Risk All Risk insurance, the insurance must waive and the Contractor hereby waives subrogation of claims against the City, its officers, agents and employees.

7. City as Additional Insured. The City shall be named as additional insured , for ongoing and completed operations for up to two (2) years, on the Contractor's and any subcontractor's policies for any claims arising out of work performed under this Contract. The Contractor shall provide the City with a Certificate of Insurance naming the City as an additional insured using ISO for CG 2010 1185 (or a substitute form providing equivalent coverage) or on the combination of ISO forms CG 20 10 07 04 or CG 20 33 07 04 and CG 20 37 07 04 (or a substitute or ISO form providing equivalent coverage) naming the City as an additional insured , giving all parties a 30 notice of cancellation or intent not to renew the insurance, a waiver of subrogation and list any and all exclusions. The coverage available to the City as an additional insured shall not be less than $1,000,000 Each Occurrence, $2,000,000 General Aggregate (subject to a per project general aggregate applicable to the project,), $2,000,000 Products/completed Operations Aggregate, and $1,000,000 Personal and Advertising injury limits.

Additional insured coverage shall apply as primary, non contributory, insurance with any other insurance afforded to the City and the Contractor.

8. Elevators, Hoist and Cranes. If the Contractor or a subcontractor will utilize in connection with the performance of the work pursuant to this contract an elevator, material hoist, crane or other equipment, or conveyor, then the Contractor shall take out and maintain or require the subcontractor to take out and maintain insurance that shall protect the Contractor and the City against claims for injuries to members of the public (including City employees) or damages to property of others (including City property) arising out of any act of the Contractor or any of its agents, employees or subcontractors resulting from the operation of such elevator, material hoist, crane or other equipment, or conveyor.

B. Insurance:

1. Workmen's Compensation Insurance: The Contractor shall take out and maintain during the term or any extensions of this contract Workmen's Compensation Insurance as required by Alabama law for all of its employees employed at the site of the Project or off-sites related to the Project and, in case any work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor.

In case any class of employees engaged in any work under this contract at the site of the Project is not protected under the Workmen's Compensation statute, the Contractor shall provide, and shall cause each subcontractor to provide, adequate accident insurance for the protection of its employees not otherwise protected.

Water or Navigational Exposure; Where work under this contract may trigger the requirement for Federal Longshoreman's and Harbor worker's Act and Federal Jones Act or insurance required by other applicable law or regulations, the Contractor shall obtain the same if required.

2. Comprehensive Automobile and Vehicle Liability Insurance: The Contractor shall maintain during the term or any extensions of this contract, comprehensive automobile and vehicle liability insurance. The limits of liability shall not be less than $1,000,000 combined single limit or equivalent.

3. Commercial General Liability Insurance: The Contractor shall maintain during the term or any extensions of this contract, Commercial General Liability Insurance, including officers, agents and employees. The limits of liability shall not be less than $1,000,000 Each Occurrence, $2,000,000 General Aggregate (subject to a per project general aggregate applicable to the project), $2,000,000 Products/Completed Operations Aggregate, and $1,000,000 Personal and Advertising Injury Limits Combined Single Limit or equivalent.

4. Owner's Protective Insurance: For projects with a contract amount of $500,000.00 or greater, an Owner's Protective Policy is required in the minimum amount of $1,000,000 each occurrence. Provided; however, the City may require such insurance on projects of lesser amount if an insurance limit amount is stated herein.

5. Umbrella Excess Liability Over Primary Insurance: The Contractor shall take out and maintain during the term of this contract, and any extensions thereof, Umbrella Excess Liability Insurance. The minimum limits of coverage shall be as follows:

Each Occurrence	$ 5,000,000.00
Aggregate	$ 5,000,000.00

The coverage shall be over the required general liability insurance and automobile liability insurance as a minimum. There shall be no gaps or sublimit deductibles, etc.

6. Miscellaneous Insurance: The Contractor shall provide whatever insurance may be required of the City or the Contractor by permits or agreements, etc., with the railroad, highways, or other utilities. The Contractor shall familiarize himself with all insurance requirements contained in easements, permits, and agreements associated with this Project. The Contractor shall provide any Railroad Protective Liability and other General Liability Insurance in the amounts contained in the agreements, permits or easements or in greater amounts if higher limits are appropriate or required elsewhere. The Contractor shall bear the cost of all required insurance and shall include in his bid a sufficient amount to cover the cost of all required insurance. To the extent the City obtains permits or licenses for railroad or highway bores, crossings or other work involved in the Project, the Contractor shall obtain adequate insurance to protect itself and the City.

7. Builders Risk All Risk Insurance: To the extent applicable to the Project, the Contractor shall secure and maintain during the life of this Contract, Builder Risk All Risk Insurance coverage for 100 percent of the Contract Price. This insurance shall not exclude coverage for earthquake, landslide, tornado, flood, collapse or loss due to the result of faulty workmanship. Such insurance shall also provide for any damages caused by injury to, or destruction of, tangible property, including loss of use resulting therefrom, and shall pay all losses to the Contractor and the City as their interest may appear.

If this is a trade contract under a construction manager format, the provisions of this subsection shall not apply.

8. Proof of Carriage of Insurance: The Contractor shall furnish the City with satisfactory proof of carriage of the insurance required herein, in the form of an insurance certificate or if the City elects in the form of a policy. Insurance shall be in a form satisfactory to the City.

(A) The Contractor's and any subcontractor's general liability and automobile liability insurance shall endorse the Owner (City of Tuscaloosa), its officers, agents and employees, as additional insured's for any claims arising out of work performed under this contract.
(B) The Contractor's insurance endorsing the Owner and others as additional insured's shall be "primary" and non contributory as to such endorsed insured's.
(C) Cancellation: The certificate and policy, as the case may be, shall state that the City shall be given thirty (30) days' written notice of cancellation or any change in the insurance coverage.
(D) There shall be a statement that the Contractor and any subcontractors waive subrogation as to the City, its officers, agents, employees and Program Coordinator.
(E) There shall be a statement that full aggregate limits apply per job or contract.
(F) Agents verification of Contractor's insurance on form provided by the City or equivalent.
(G) Insurance shall contain no exclusions for x, c or u.
(G) Full aggregate limits must apply per job or contract.

C. **No Personal Liability of Public Officials:** In carrying out any of the provisions hereof in exercising any authority granted by the Contract, there will be no personal liability upon any public official.

D. **Indemnity:** To the maximum extent permitted by law, the Contractor shall save harmless, indemnify and defend the City, its officers, agents and employees from and against any and all claims and losses, cost, expense or liability including attorney's fees and litigation costs caused by, arising out of, resulting from, or occurring in connection with the performance of the work by the Contractor or any subcontractor, regardless of the fault, breach of contract, or negligence of the City, its officers, agents or employees excepting only such claims or losses that have been adjudicated to have been caused solely by the negligence of the City and regardless of whether or not the Contractor is or can be named a party in a litigation.

Contractor agrees to indemnify and/or reimburse the City for any fines, violations, charges, suits, or sums of money imposed by the Alabama Department of Environmental Management (ADEM), Environmental Protection Agency (EPA), or any administrative agency on the City of Tuscaloosa for any sewage or contaminate discharged or Wetlands regulations violation as a result of or arising out of the work by the Contractor pursuant to this agreement.

E. **Errors and Omissions.** The Contractor does agree to release and hold harmless the City of Tuscaloosa or any of its officers, agents and employees and its Program Coordinator from any damages claimed by the Contractor or subcontractors resulting from or attributable in whole or in part to, errors in or omissions of the plans and specifications, including final drawings of the Engineer/Architect or other design professionals. As to plans, specifications or designs prepared by independent design professionals, the parties agree that any City review or approval thereof was only for overall suitability, maintenance and usability and there are no express or implied warranties by the City as to the adequacy, accuracy, correctness, or code compliance thereof.

F. **Exclusion of Contractor Claims:** In performing its obligations, the Engineer/Architect and its consultants may cause expense for the Contractor or its subcontractors and equipment or material suppliers. However, those parties and their sureties shall maintain no direct action against the City or its officers, employees, agents and program coordinator for any claim arising out of, in connection with, or resulting from the Engineering services performed or required to be performed where such services are performed in good faith to protect the City or the Public.

G. **Inadequate Surety/Insurance.** It is further mutually agreed between the parties hereto that if, at any time after the execution of this agreement, any of the surety bonds of the Contractor or subcontractors relating to the Project for its faithful performance shall be deemed by the City to be unsatisfactory, or if for any reason such bond(s) ceases to be adequate to cover the performance of the work or the surety ceases to do business by agent in Tuscaloosa County, Alabama, the Contractor shall, at its expense, within five (5) days after the receipt of notice from the City so to do, furnish an additional bond or bonds in such form and amount and with such surety or sureties as shall be satisfactory to the City. In such event, no further payment to the Contractor shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the City.

H. **Changes.** When changes in the scope of work by written order or change orders aggregate in amount equal to 10 percent of the total contract, including the change order or change orders, the insurance coverage included under this heading shall be increased accordingly by the Contractor. Proof of coverage shall be established by endorsement to the original policy or by re-issue of the original policy to include the added coverage, or in accordance with any other acceptable policy with the insuring company for increasing the coverage.

ARTICLE VI. OBSERVATION OF THE PROJECT

A. **Generally:** The Contractor shall furnish the Engineer/Architect and/or the City's observer with every reasonable facility for ascertaining whether or not the work performed is in accordance with the requirements and intent of the Specifications and Contract Documents. No work shall be done without suitable inspection by the Engineer/Architect's Inspector or the City's observer. Payment for work or failure to reject any defective work shall not in any way prevent later rejection when such defect is discovered, nor obligate the City to final acceptance. All work done when not in accordance with the Plans, specifications and contract will be rejected and, without cost to the City, shall immediately be removed and other work done in accordance therewith by the Contractor. If the Contractor fails to remove the work as above ordered, then the Engineer/Architect shall have the right and authority to stop the Contractor and his work at once and the City may correct the work as herein provided at the cost and expense of the Contractor.

Inspection is not acceptance and shall not constitute acceptance by the City.

The work shall also be subject to inspection by representatives of the City of Tuscaloosa Building Inspection Department.

B. **Observation of the Project:** The Engineer/Architect, the City and its observers, agents, any agency having jurisdiction, and their representatives shall have access at all times to the Project for inspection whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection. The City or the Engineer/Architect may appoint or assign observers, with designated duties and restricted authority, to inspect the Project as may be directed, or to make special observations requested in advance by the Contractor, and to report progress of the Project, and manner of procedure, quality of the material and workmanship, and compliance with the Contract Documents.

Inspection or observation is not acceptance and shall not constitute acceptance by the City.

All materials, workmanship, equipment, processes of manufacture, and methods of construction, shall be subject to inspection, examination, and test by such persons at any and all places where such manufacture and/or construction are being carried on. The Engineer/Architect shall have the right to reject material, workmanship and/or equipment that are defective or otherwise not in accordance with the drawings and Specifications and require its correction by the Contractor. Rejected workmanship shall be satisfactorily corrected, and rejected material shall be satisfactorily replaced with proper material by the Contractor without charge therefor, and the Contractor shall promptly segregate and remove the rejected material from the premises. Provided; however, neither the presence or absence of such observers nor the giving or failure to give such advice, direction or instruction shall in any manner relieve the Contractor from any contract requirement.

Upon rejection of material and/or workmanship by the Engineer/Architect or the City, there may be occasion where such deficiencies may be corrected more economically and timely through modification of the design versus removal and replacement. In such instances, the Engineer/Architect shall provide design services on behalf of the City necessary for analysis and correction of the rejected work. Costs associated with hourly fees for these professional services shall be paid by the City and deducted from payment to the Contractor based on the actual costs incurred. Prior to beginning any analysis and accrual of associated professional service fees, the Engineer/Architect shall provide the Contractor and City notice in writing of the intent to begin, summary of the scope of work, estimated time to complete, and estimated total fees. Any costs associated with corrective work performed by the Contractor to remedy such deficiencies shall be the sole responsibility of the Contractor.

Neither the City observers nor the Engineer/Architect, will be authorized to revoke, alter, relax, or waive any requirements of the Contract Documents; to issue instructions contrary to the drawings and Specifications; nor shall they supervise and direct work for the Contractor, nor unreasonably interfere with the Contractor's operations beyond the extent necessary to make certain that the Project is being carried out according to the contract requirements.

Any advice which they may give the Contractor shall not be construed as binding the City in any way, nor as releasing the Contractor from any of the contract requirements.

If the Contractor considers any work demanded of it to be outside the contract requirements, or any ruling of the Engineer/Architect or an inspector to be unfair, it may immediately, upon such work being demanded or ruling made, request written instructions from the Engineer/Architect, or inspector, or within ten days file an appeal to the Engineer/Architect or the City, stating clearly and in detail the basis of its objections. However, pending the decision on such appeal no work shall be done in disregard of the rulings of the Engineer/Architect or inspector or his instructions on items of work affected by such appeal.

The Contractor shall furnish promptly, without extra compensation, all reasonable facilities, labor, and material necessary for safe and convenient access, inspection, and tests that may be required by the Engineer/Architect.

C. **Authority and Duties of Observers:** If City or consultant inspectors, whether for the Engineer/Architect or Construction Manager, are being utilized, they shall be authorized and permitted to inspect all work done. The Inspector shall not be authorized to alter or waive any requirements of the Specifications. He shall have authority to call the attention of the Contractor to failure of the work to conform to the specifications and Contract. He may suspend the Project until any questions at issue can be referred to and decided by the Engineer/Architect or the City.

Neither the Engineer/Architect, Inspector, the City or other representatives for the City shall be responsible in any way for construction means, methods or techniques, nor for the safety of the construction work, progress, or employees of the Contractor or any subcontractors, except as set forth in the Construction Manager contract, if applicable.

The presence of the Inspector shall not in any manner lessen the responsibility of the Contractor pursuant to this agreement.

D. **Defective Work/Correction of Work by the City:** The inspection of the work shall not relieve the Contractor of any of its obligations to fulfill its contract and defective work shall be made good, notwithstanding that such work has been previously inspected by the Engineer/Architect and accepted or estimated for payment. The failure of the Engineer/Architect or inspector to condemn improper workmanship shall not be considered as a waiver of any defect, whether known at the time or discovered later, or as preventing the City at any time subsequently from recovering damages for work actually defective. All work shall be guaranteed by the Contractor against defects in workmanship for a period of one year from date of final payment.

Upon failure and/or neglect by the Contractor to promptly prosecute or perform the work in accordance with the contract documents, including any requirements with respect to the construction schedule, plans or specifications, the City may, without prejudice to any other remedy it may have, correct such deficiencies and may deduct the actual cost thereof from payment, then or thereafter due to the Contractor.

E. **Disagreement:** Should any disagreement or difference arise as to the estimated quantities or classifications or as to the meaning of the drawings or specifications, or any point concerning the character, or acceptability or nature of the several kinds of work, or construction thereof, the decision of the Engineer/Architect shall be final and conclusive and binding on the Contractor.

F. **Stop Work Orders:** During unseasonable weather all work must stop when the Engineer/Architect so directs and all work must be suitably protected by Contractor at all times. However, the Engineer/Architect shall be under no obligation to stop work on the Project. If the Project is stopped, the Contractor shall not be entitled to extra compensation for delays or problems associated with the stoppage.

G. **Progress Meetings:** The Contractor shall conduct regular progress meetings during the course of the Project at least once a month or more often if requested by the City or Engineer/Architect. The meetings shall be held at a site convenient to all parties and if a site cannot be agreed upon, the City will designate a site.

The Contractor or designated representative, the Contractor's Superintendent, all subcontractors, engineers, inspectors, and the City's representative shall attend.

The Contractor shall keep accurate written minutes of the meetings and forward copies thereof to the Engineer/Architect and the City's representative before the next scheduled meeting.

If a trade contract, progress meetings will be conducted by the Construction Manager, who will keep minutes. All trade contractors shall attend unless excused by the Construction Manager.

ARTICLE VII. PROJECT COMPLETION

A. **Substantial Completion:** "Substantial completion" shall be that degree of completion of the Project or a defined portion of the Project, as evidenced by the Engineer/Architect's written notice of Substantial Completion, sufficient to provide the City, at its discretion, the full-time use of the Project or defined portion of the work for the purposes for which it was intended. "Substantial Completion" of an operating facility or operating component of the Project shall be that degree of completion that has provided a minimum of seven (7) continuous days of successful, trouble-free operation in a "fully automatic" manner acceptable to the City and Engineer/Architect and with all redundant systems fully operational. All equipment contained in the Project, plus all other components necessary to enable the owner to operate the facility in the manner that was intended, shall be complete on the substantial completion date.

When the Contractor considers that the Project, or where acceptable to the City, a designated portion thereof is substantially complete, the Contractor shall prepare and submit to the Engineer/Architect a list of items to be completed or corrected and request an inspection for Substantial Completion. The failure by the Contractor to include any items on such list does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents. After inspection and/or if an operating facility, after a minimum of seven (7) continuous days of successful, trouble free operation has been achieved during startup, the Engineer/Architect may, at his sole discretion, issue a written notice of substantial completion for the purpose of establishing the starting date for specific equipment guarantees or warranties, and to establish the date that the City will assume the responsibility for the cost of operating such equipment.

Said notice shall not be considered as final acceptance of any portion of the Project or relieve the Contractor from completing the remaining work, including any remaining performance or acceptance testing, within the specified time and in full compliance with the Contract Documents. Specifically, the issuance of a written notice of Substantial Completion shall not relieve the Contractor of his obligation to promptly remedy any omissions and latent or unnoticed defects in the Project covered by the written Notice of Substantial Completion.

B. **Final Inspection:** Upon notice from the Contractor that its work is complete, the Engineer/Architect and/or other representatives of the City shall make a final inspection of the work or Project and conduct test or tests if applicable. The Engineer/Architect shall notify the Contractor of all apparent and/or visible instances where the Project fails to comply with the plans and specifications and contract documents, as well as any defects he may discover (punch list). The Contractor shall immediately make such alterations as are necessary to make the Project comply with the plans and specifications and to the satisfaction of the Engineer/Architect.

Upon completion of all such repairs in a satisfactory manner, and when the Engineer/Architect has determined that the work or Project is acceptable under the contract, including this provision and after publication of final completion and all other requirements of final payment as provided for in this agreement, then he shall issue a final certificate of payment to the City stating that the balance is due the Contractor, less such amounts as may have been withheld by the City from time to time as provided in the contract documents. In recommending to the City that it make such final payment to the Contractor, the Engineer/Architect shall also issue a certificate of final acceptance wherein he shall recommend to the City that it accept the Project and/or work as final and complete pursuant to the contract documents.

Verification, approval, inspection, final inspection, issuance of final acceptance, issuance of final certificate of payment, action or approval by the City upon the final certificate of payment or final acceptance shall not in any way relieve the Contractor of responsibility for faulty materials or workmanship.

All warranty or guarantee periods shall commence and start to run from the date of substantial completion.

C. **"As Built" Drawings:** Unless waived by the City representative, the Contractor must provide to the City a set of "as built" drawings acceptable to the City as a component part of the Project prior to final payment.

D. **Final Cleanup:** Before final completion and final acceptance, the Contractor shall remove from the City's property or rights-of-ways and from all public and private property, all tools, scaffolding, false work, temporary structures and/or utilities, including the foundations thereof (except such as the City permits in writing to remain); rubbish and waste materials resulting from its operation or caused by its employees; and shall remove all surplus materials, leaving the site clean and true to line and grade, and the Project in a safe and clean condition ready for use and operation. In addition to the above, the Contractor shall be responsible for the following special cleaning for all trades as the Project shall have been completed:

1. Cleaning of all painted, enameled, stained or baked enamel work: removal of all marks, stains, fingerprints and splatters from such surfaces.
2. Cleaning of all glass: cleaning and removing of all stickers, labels, stains and paint from all glass and the washing and polishing of the same on interior and exterior.
3. Cleaning or polishing of all hardware.
4. Cleaning all tile, floor finishing of all kinds; removal of all splatters, stains, paint, dirt, and dust, the washing and polishing of all floors as recommended by the manufacturer or required by the Engineer/Architect.
5. Cleaning of all manufactured articles, materials, fixtures, appliances and equipment; removal of all stickers, rust stains, labels (except instructional and/or safety labels) and temporary covers and cleaning and conditioning of all manufactured articles, materials, fixtures, appliances, electrical, heating and air conditioning equipment as recommended or directed by the manufacturers, unless otherwise required by the Engineer/Architect; blowing out or flushing out of all foreign matter from all dust pockets, piping, tanks, pumps, fans, motors, devices, switches, panels, fixtures, boilers, similar features; and freeing identification plates on all equipment or excess paint and the polishing thereof.

In the case of failure to comply with the above requirements for any part of the Project within the time specified by the Engineer/Architect, he may cause the work to be done and deduct the cost thereof from the contract price on the next or succeeding application for payment, or in the event that the cost exceeds the balance due the Contractor, bill the Contractor for the excess.

E. **Notice of Completion:** The Contractor shall, immediately after the completion of the Project and acceptance by the Owner as provided for herein, give notice as required by Ala. Code §39-1-1(f) by an advertisement in some newspaper of general circulation published within the city or county wherein the Project has been done for a period of four (4) successive weeks. The advertisement shall advise interested parties to contact both the Contractor and the specific City representative. The City's representative shall be named along with his proper mailing address. In no instance shall a final payment be made upon the contract until the expiration of thirty (30) days after the completion of the notice. Proof of publication of said notice shall be made by the Contractor to the City of Tuscaloosa by affidavit of the Publisher and a printed copy of the notice published.

Provided, however, that the requirements hereinabove stated for notice and advertisement shall not apply to contractors performing contracts of less than Fifty Thousand Dollars ($50,000.00) in amount and the governing body of the City of Tuscaloosa so as to expedite final payment, shall cause notice of final completion of such contract to be published one time in Tuscaloosa County and shall post notice of final completion on the City of Tuscaloosa's bulletin board for one (1) week and shall require the Contractor to certify under oath that all bills have been paid in full. Final settlement with such Contractor may be made at any time after the notice shall have been posted for one (1) entire week.

NOTE: **When maintenance periods are included in the contract for highways, bridges or similar structures, such periods shall be considered component parts of the contract.**

F. **Final Payment:** Upon completion of the Project by the Contractor and acceptance by the City's representatives of all work required of the Contractor for the Project, but not until thirty (30) days after completion of the notice, the amount due the Contractor pursuant to the Contract Documents shall be paid upon the presentation by the Contractor to the City's representative of the following:

1. A properly executed and duly certified voucher for payment, verified by architect, engineer or other City representative, including therewith evidence that all payrolls and all amounts due for labor and materials, other than claims for damages due to tort, have been fully paid and satisfied and there are no outstanding claims or demands associated with the work on the Project.
2. A release of all claims and claims of lien against the City from the Contractor and all major subcontractors (the City may waive the requirement for subcontractor releases) arising under and by virtue of the contract, on the form attached, duly executed by the Contractor and with the consent of the surety. The Contractor may specifically except claims of the Contractor from the operation of the release if specifically excepted therefrom in stated amounts and the reason therefor.
   The Contractor may with the consent of the City representative, if any subcontractor refuses to furnish such a release, furnish a bond with surety satisfactory to the City representative to indemnify against such claims.
3. Proof of publication of notice of completion including affidavit of publisher and a printed copy of the notice so published, as provided by law.
4. In accordance with Ala. Code §39-2-12(c), a non-resident contractor shall satisfy the City that he or she has paid all taxes due and payable to the State, the City and all applicable political subdivisions.

G. **Acceptance of Final Payment Constitutes Release:** The acceptance by the Contractor of the final payment shall release the City, the Engineer/Architect, as representatives of the City, and their officers, employees, agents, and subconsultants from all claims and all liability to the Contractor for all things done or furnished in connection with the Project, and every act of the City and others relating to or arising out of the work except claims previously made in writing and still unsettled. No payment, however, final or otherwise, shall operate to release the Contractor or his Sureties from obligations under this Contract and the Performance Bond, Payment Bond, and other bonds, warranties and guarantees as herein provided.

ARTICLE VIII. WARRANTY AND GUARANTEES

A. **Warranty and Guarantee:**

1. Warranty: The Contractor warrants to the City and the Engineer/Architect that all materials and equipment furnished under this Contract will be new unless otherwise specified and that all work, materials and equipment will be of good quality, free from fault and defects and in conformance with the contract documents. The work must be safe, substantial and durable construction in all respects. All work, materials and equipment not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Warranties shall commence to run from the date of substantial completion.

The work furnished must be of first quality and the workmanship must be the best obtainable in the various trades. The Contractor hereby guarantees the Project and the work on the Project against defective materials or faulty workmanship for a minimum of one (1) year after final payment by the City and shall replace or repair any defective materials or equipment or faulty workmanship during the period of guarantee at no cost to the City.

2. Guarantee: If, within the designated warranty period or if not designated, within one (1) year from the date of substantial completion, any of the work, materials or equipment is found to be defective or not in accordance

with the contract documents, the Contractor shall correct it promptly after receipt of written notice from the City to do so, unless the City has previously specifically given the Contractor a written acceptance of such specific condition. This obligation shall survive termination of the Contract. The City shall give such notice promptly after discovery of the condition.

3. Roofing Guarantee: If the Project involves a roof on a building or other structure, then the Contractor shall execute and provide the Roofing Guarantee in the form attached hereto. The guarantee shall be delivered to the City and Engineer/Architect prior to final payment.

4. Termite Warranty: If the Project involves termite treatment as required in Article IV, then the Contractor shall furnish to the City a written warranty certifying that the applied soil poisoning treatment will prevent the infestation of subterranean termites and that if subterranean termite activity is discovered during the warranty period, Contractor shall re-treat the soil and repair or replace any damage caused by termite infestation. The warranty shall be for a period of five (5) years from the date of treatment signed by Applicator and Contractor.

B. **Correction of Defective Work During Warranty/Guarantee Period:** The Contractor hereby agrees to make, at his own expense and no cost to the City, all repairs or replacements necessitated by defects in materials or workmanship, provided under the terms of this Contract, and pay for any damage to other works resulting from such defects, which become evident within 1 year after the date of substantial completion unless substantial completion is established by the Engineer/Architect only for specified items of equipment, or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents unless the City has previously given the Contractor a written acceptance of such defects. The Contractor shall promptly correct such defects upon receipt of a written notice from the City to do so. This obligation shall survive the termination of the Contract.

Unremedied defects identified for correction during the warranty period described herein before, but remaining after its expiration, shall be considered as part of the obligations of the warranty. Defects in material, workmanship, or equipment which are remedied as a result of obligations of the warranty shall subject the remedied portion of the Project to an extended warranty period of 1 year after the defect has been remedied.

Repetitive malfunction of equipment shall be cause for equipment replacement and an extension of the guarantee period for the equipment to a date 1 year following acceptable replacement.

The Contractor further assumes responsibility for a similar guarantee for all work and materials provided by subcontractors or manufacturers of packaged equipment components.

The Contractor also agrees to hold the City and the Engineer/Architect and employees harmless from liability or damages, including the Engineer/Architect's and attorneys' fees, and cost and expenses of litigation of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from the City. If the Contractor fails to make the repairs and replacements promptly, or in an emergency where delay would cause serious risk, or loss, or damage, the City may have the defective work corrected or the rejected work removed and replaced, and the Contractor and his Surety shall be liable for the cost thereof. The Contractor during the warranty period shall repair/replace as rapidly as possible any and all equipment, materials, etc., which are found to be defective. Should any items not be repaired/replaced within thirty (30) days from the time it is reported to the Contractor by the City, then the warranty period shall be extended on that item for a period equal to the time that the item has remained defective, incomplete, or inoperable as determined by the City. The Contractor must certify that the item has been corrected.

The City's rights under this Article shall be in addition to, and not a limitation of, any other rights and remedies available by law.

ARTICLE IX. LAWS, PERMITS, ETC.

A. Laws and Regulations/Royalties, Patents, Copyrights and Permits and Rights-of-Way: The Contractor shall comply with and keep itself fully informed of all laws, ordinances and regulations of federal, state, City and county in any manner effecting those engaged or employed in the Project, or the materials used in the Project, or in any way affecting the conduct of the Project, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same. The Contractor shall possess all permits and licenses required by applicable law, rule or regulation for the performance of the Project. If any discrepancy or inconsistency should be discovered in this contract, or in the drawings or specifications herein referred to, in relation to any law, ordinance, regulation, order or decree, it shall forthwith report the same in writing to the Engineer/Architect. It shall at all times, itself, observe and comply with all such existing and future laws, ordinances and regulations.

The Contractor shall protect and indemnify the City, Engineer/Architect, and their respective employees, officers, subconsultants, and agents against any claim or liability arising from or based on the violation of any such laws, ordinances, or regulations. All permits, licenses, and inspection fees necessary for prosecution and completion of the Project shall be secured and paid for by the Contractor, unless otherwise specified.

The Contractor shall obtain and pay for all licenses and permits and shall pay all fees and charges for connection to outside service and the use of property required for the execution and completion of the Project.

The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations, and code requirements applicable in or bearing on the conduct of the Project unless in conflict with contract requirements. If the Contractor ascertains at any time that any requirements of the Contract is at variance with applicable laws, ordinances, regulations, or building code requirements, it shall promptly notify the Engineer/Architect and any necessary adjustment of the Contract will be made as herein specified under change in orders.

The Contractor shall pay all applicable federal, state and local taxes and assessments on the Project. Wherever the law of the place of building requires a special tax, consumer, use, occupation, or other tax, the Contractor shall pay such tax.

The Contractor shall pay all royalties and license fees. The Contractor shall hold and save the City and its agents and employees harmless from liability of any nature or kind, including costs and expenses, for or on account of any patented or unpatented invention, process, article or appliance manufactured or used in the performance of the contract, including its use by the City.

To the extent that the Project has not been permitted or registered by the Engineer or City, the Contractor shall register or obtain any and all necessary National Pollutant Discharge Elimination System (NPDES) Permits required by USEPA or the Alabama Department of Environmental Management (ADEM) as well as any applicable storm water permits or registration for the construction of the improvements specified in the Contract Documents. The Contractor shall abide by all regulations and conditions relative to the permit or registration and attachments to the permit or registration, including but not limited to sampling and monitoring. The Contractor shall fulfill for the City all the requirements made upon the City by the permit(s) or registration.

The Contractor shall be fully responsible for all aspects of erosion and sediment control. The Contractor shall utilize whatever measures are necessary to prevent pollution or siltation due to his activities. As a minimum, the Contractor shall strictly comply with the erosion control methods referenced in the Alabama Soil and Water Conservation Committee "Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas," latest edition (referred to as the "Alabama Handbook").

If the Contractor has information that any process, article or item specified or delineated by the Engineer/Architect is an infringement of a patent or a copyright, it shall promptly give such information to the Engineer/Architect.

B. Alabama Department of Transportation Rights-of-Way: If any portion of the Project involves work upon State right-of-way, the Contractor agrees to provide the Alabama Department of Transportation with a bond or certified check in the amount required, made payable to the Alabama Department of Transportation, to guarantee the faithful performance of the provisions of a permit and to guarantee that the Contractor shall maintain the work in a manner suitable to the Alabama Department of Transportation for a period of one (1) year. The Alabama Department of Transportation Bond Form must be used. At the end of one (1) year from the completion of this work, the Department of Transportation will return the certified check or bond to the applicant provided all provisions of this permit have been complied with. Otherwise, the Department of Transportation shall apply the certified check or bond to the cost of repairing the rights-of-way with State forces.

C. Tuscaloosa County Right-of-Way: If any portion of the Project involves work upon County right-of-way, the Contractor agrees to execute an application and file with Tuscaloosa County a bond or certified check in the amount required, made payable to Tuscaloosa County to guarantee the faithful performance of this provision of this work suitable to the County for a period of one (1) year. At the end of one year from the completion of this work, the County will return the certified check or bond to the applicant provided all provisions of this permit have been complied with. Otherwise, the County shall apply the certified check or bond on the cost of repairing the right-of-way with the County forces.

D. Storm Water Permit and Monitoring:

1. To the extent that the Project has not been permitted or registered by the Engineer or the City, and the Project is defined as an NPDES Construction Site per ADEM Admin. Code Chapter 335-6-12 (the Rule), the Contractor shall submit to the Alabama Department of Environmental Management (ADEM) a Notice of Registration (NOR) under the Rule for Storm Water Discharges during construction activities.
   The Contractor shall strictly adhere to all requirements of the NOR and the rule regardless of which party has obtained coverage.
2. Compliance with all provisions of ADEM Admin. Code Chapter 335-6-12 and this registration is required, including but not limited to, the preparation and implementation of a Construction Best Management Practices Plan (CBMPP) and any other plans as may be required, the regular maintenance of the Best Management Practices (BMPs) to the maximum extent practicable and the submittal of required reports. As required by the Rule, the Contractor shall retain a Qualified Credentialed Professional (QCP) to prepare the CBMPP and to certify that it was prepared in accordance with the requirements of the "Alabama Handbook" and the Rule.
3. This registration neither precludes nor negates an operator's responsibility or liability to apply for, obtain, or comply with other ADEM, federal, state, or local government permits, certifications, licenses, or other approvals.
4. The Contractor, unless application for registration has already been made, will be furnished a Storm Water NOR application package when the contract is awarded. The Storm Water NOR application package will include the following:
   a. Typical transmittal letter to ADEM.
   b. NOR applications filled out with Project information.
   c. Project area map.
   d. Other data as required by the NOR for Tier 1 waters if applicable.
5. The Contractor will complete or furnish the following items and submit to ADEM within five working days of the receipt of the NOR application provided by the Owner.

a. Information as outlined in the typical letter of transmittal, to the address indicated on the letter of transmittal, by registered mail or hand deliver.

b. The "Alabama Department of Environmental Management (ADEM), Field Operations Division Storm Water Program" Notice of Registration (NOR); NOR shall be signed by a responsible official who is the operator, owner, the sole proprietor of a sole proprietorship, a general/controlling member or partner, or an executive officer of at least the level of vice-president for a corporation. Additionally, the QCP is required to sign the CBMPP certification part of the NOR.

c. Determine applicable fee per ADEM Fee Schedule F and make check payable to: Alabama Department of Environmental Management for the NOR and submit to the Alabama Department of Environmental Management with the NOR application.

6. Application for the Storm Water Permit shall be made by the Contractor no later than five working days after receipt of application provided by Owner. The Contractor shall not commence any construction activities until ADEM has issued the authorization number for the Project.

7. a. Payment will be made to the Contractor for obtaining the storm water NOR as specified herein for the lump sum amount as shown in the bid schedule. If there is no line item for registration, obtaining the NOR shall be considered a subsidiary obligation of mobilization.

b. Individual erosion and sediment control items shall be paid for at the unit prices as shown in the bid schedule. Routine inspections will be performed by the Owner's representative or Engineer to verify compliance with the CBMPP and the Rule shall be the Contractor's responsibility and shall be incidental to the storm water registration.

c. If no individual erosion and sediment control items are included in the bid schedule the cost of these items shall be incidental to the lump sum amount as shown in the bid schedule for Storm Water Monitoring and Temporary Erosion and Sediment Control and payment shall be made pro rata as the Project progresses.

E. The Contractor shall perform all work in compliance with and as required by any State, Federal or Local registration, permit or license, the terms and conditions of which are adopted herein by reference. The Contractor agrees to indemnify and hold harmless the City, Engineer, and their respective officers, agents and employees from any fines, penalties, damages, claims, liability or judgment arising out of or in any manner associated with the Contractor's failure to perform work on the Project in strict accordance with all storm water registration, permit or license requirements.

ARTICLE X. MISCELLANEOUS CLAUSES

A. Notice and Service Thereof:

1. All notices, demands, requests, change orders, instructions, approvals and claims shall be in writing. Unless expressly otherwise provided elsewhere in this agreement, any election, notice or other communication required or permitted to be given under this agreement shall be in writing and deemed to have been duly given if provided in accordance with the provisions hereof.

2. Any notice to or demand upon the Contractor shall be in writing and shall be sufficiently given if addressed to the Contractor at the address stated herein and deposited in the United States mail in a sealed envelope with sufficient postage prepaid or delivered with charges prepaid to any telegraph company for transmission to the Contractor at such address. It shall also be sufficient if such notice or demand be served upon the Contractor personally or its local representative in charge of the Project or delivered at his local office. The Contractor shall, from time to time, designate to the City in writing any change of address to which such notice or demand shall be sent.

3. Any notice to or demand upon the City shall be in writing and shall be sufficiently given if delivered to the office of the City's representative or if addressed to the City representative and deposited in the United States mail in a sealed envelope with sufficient postage prepaid or delivered with charges prepaid to any telegraph company for transmission to such representative of the City.

B. City Representative: The City's representative on this Project is hereby designated as Walker Associates, Inc. and whose address is 917 22nd Avenue, Suite B, Tuscaloosa, Alabama 35401. All references to Engineer or Architect shall be to the City representative if no Engineer or Architect is involved in the Project.

With a copy to: Glenda Webb, Esquire, City Attorney, Office of the City Attorney
City of Tuscaloosa, Post Office Box 2089, Tuscaloosa, Alabama 35403-2089
Telephone: (205) 248-5140, Facsimile: (205) 349-0328

C. Contractor Representative: The Contractor's representative on this Project is hereby designated as ____ LEE WILLIAMS and whose address is P.O. BOX 657, NORTHPORT, AL 35476.

D. Capacity: Each party to this agreement represents and warrants to the other as follows:

1. That it is an individual of the age of majority or otherwise a legal entity duly organized and in good standing pursuant to all applicable laws, rules and regulations.
2. That each has full power and capacity to enter into this agreement, to perform and to conclude the same including the capacity, to the extent applicable, to grant, convey and/or transfer; areas, assets, facilities, properties, (both real and personal), permits, consents and authorizations and/or the full power and right to acquire and accept the same.
3. That to the extent required, each party has obtained the necessary approval of its governing body or board and a resolution or other binding act has been duly and properly enacted by such governing body or board authorizing this agreement and said approval has been reduced to writing and certified or attested by the appropriate official of the party.
4. That each party has duly authorized and empowered a representative to execute this agreement on their respective behalf and the execution of this agreement by such representative fully and completely binds the party to the terms and conditions hereof.
5. That absent fraud, the execution of this agreement by a representative of the party shall constitute a certification that all such authorizations for execution exist and have been performed and the other party shall be entitled to rely upon the same. To the extent a party is a partnership, limited liability company or joint venture, the execution of this agreement by any member thereof shall bind the party and to the extent that the execution of agreement is limited to a manager, managing partner or specific member then the person so executing this agreement is duly authorized to act in such capacity for the party.
6. That each party represents and warrants to the other that there is no litigation, claim or administrative action threatened or pending or other proceedings to its knowledge against it which would have an adverse impact upon this transaction or upon either's ability to conclude the transaction or perform pursuant to the terms and conditions of this agreement.
7. That each party has obtained any and all required permits, approvals and/or authorizations from third parties to enable it to fully perform pursuant to this agreement.
8. Under the provisions of the Constitution and laws of the State of Alabama, each party has the power to consummate the transactions contemplated by this agreement;
9. Each party represents and warrants that the execution and delivery of this agreement and the consummation of the transactions contemplated herein will not conflict with, be in violation of, or constitute (upon notice or lapse of time, or both) a default under the laws of the State of Alabama, any resolution, agreement, or other contract agreement, or instrument to which a party is subject,

or any resolution, order, rule, regulation, writ, injunction, decree or judgment of any governmental authority or court having jurisdiction over the party.

10. This agreement constitutes the legal, valid and binding obligation of each party and is enforceable against each party in accordance with its terms, except in so far as the enforceability thereof may be limited by:
    (a) Bankruptcy, insolvency or other similar laws affecting the enforcement of creditors' rights
    (b) General principles of equity, regardless of whether such enforceability is considered as a proceeding at equity or at law.
11. Neither party will enter into any agreement to do anything prohibited in this agreement or enter into any agreement or take any action which would in any way impair the ability of the other party to faithfully and fully perform its obligations hereunder.
12. Under the provisions of the Constitution and laws of the State of Alabama, each party has the power to consummate the transactions contemplated by this agreement.

E. Ownership of Contract Documents: The Contract Documents, and copies of parts thereof, are furnished and owned either by the City or the Engineer/Architect. All portions of the Contract Documents, and copies of parts thereof, are the instruments of service for this Project. They are not to be used on other work and are to be returned to the City on request at the completion of the Project. Any reuse of these materials without specific written verification or adaptation by the City will be at the risk of the user and without liability or legal expense to the City or Engineer/Architect. Such user shall hold the City, its officers, agents and employees harmless from any and all damages, including reasonable attorneys' fees, from any and all claims arising from any such reuse. Any such verification and adoption shall entitle the City to further compensation at rates to be agreed upon by the user and the City.

F. No Waiver of Rights: Neither the inspection by the City or the Engineer/Architect or any of their officers, employees, agents, or subconsultants, nor any order by the City for payment of money, nor any payment for, or acceptance of, the whole or any part of the Project by the City or Engineer/Architect, nor any extension of time or change order, nor any possession taken by the City or its employees, or non enforcement of any provision of this agreement by either party shall operate as a waiver of any provision of this agreement, or any power herein reserved to the City, or any right to damages, nor shall any waiver of any breach in this agreement be held to be a waiver of any other or subsequent breach. Acceptance or final payment shall not be final and conclusive with regards to latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the City's rights under any warranty.

G. Subletting or Assigning of Contract:

1. Limitations: The Contractor shall not sublet, assign, transfer, convey, sell or otherwise dispose of any portion of the agreement, his obligations, right, or interest therein, or its power to execute such agreement, to any person, firm or corporation without written consent of the City and such written consent shall not be construed to relieve the Contractor of any duty or responsibility for the fulfillment of the agreement. A sale, conveyance or transfer of 50% or more of the stock or ownership of the Contractor shall be considered an assignment. Provided; however, in no event shall any portion of this agreement be assigned to an unsuccessful bidder whose bid was rejected because he or she was not a responsible or responsive bidder. Use of subcontracts up to a combined (total) value of 50 percent of the value of all work will not be construed as an assignment. Unless otherwise stipulated in the proposal or general conditions, the Contractor shall perform, with its own organization, work with the value not less than fifty (50) percent of the value of all work embraced in the contract.
2. Subcontractor's Status: A subcontractor shall be recognized only in the capacity of an employee or agent of the Contractor.

H. **Third Party Beneficiaries:** It is the intent of the parties hereto that there shall be no third party beneficiaries to this agreement.

I. **Final Integration:** This Agreement constitutes the entire agreement of the parties, as a complete and final integration thereof with respect to its subject matter. All written or oral understandings and agreements heretofore had between and among the parties are merged into this Agreement, which alone fully and completely expresses their understandings. No representation, warranty, or covenant made by any party which is not contained in this Agreement or expressly referred to herein has been relied on by any party in entering into this Agreement.

J. **Force Majeure:** Neither party to this Agreement shall hold the other party responsible for damages or delay in performance caused by acts of God, strikes, lockouts or other circumstances beyond the reasonable control of the other or the other party's employees, agents or contractors.

K. **Amendment in Writing:** This Agreement may not be amended, modified, altered, changed, terminated, or waived in any respect whatsoever, except by a further agreement in writing, properly executed by all of the parties.

L. **Binding Effect:** This agreement shall bind the parties and their respective personal representatives, heirs, next of kin, legatees, distributees, successors, and assigns.

M. **Captions:** The captions of this Agreement are for convenience and reference only, are not a part of this Agreement, and in no way define, describe, extend, or limit the scope or intent of this Agreement.

N. **Construction:** This Agreement shall be construed in its entirety according to its plain meaning and shall not be construed against the party who provided or drafted it.

O. **Mandatory and Permissive:** "Shall", "will", and "agrees" are mandatory; "may" is permissive.

P. **Governing Laws:** The laws of the State of Alabama shall govern the validity of this Agreement, the construction of its terms, the interpretation of the rights, the duties of the parties, the enforcement of its terms, and all other matters relating to this Agreement.

Q. **Liability of the City or City Officials.** Notwithstanding any provision hereof to the contrary, the parties agree and acknowledge that the liability and obligations of the City, City officials or City employees as set forth herein are subject to the limitations imposed on municipalities by the Constitution and laws of the State of Alabama. No present or future official, officer or employee of the City shall ever be personally liable for the performance of any obligations hereunder.

R. **Non Discrimination:** The Contractor agrees that in performing the work and services as required herein under this agreement, not to discriminate against any person on the basis of race color, religion, sex, age or disability. (The Contractor shall fully comply with the Americans with Disabilities Act), the Fair Labor Standards Act and all other applicable laws and regulations).

S. **Fines and Penalties:** The Contractor shall be solely liable for any and all fines or penalties which may be levied by any governmental authority against the Owner and/or Contractor which are related to the Contractor's operations. The Owner shall deduct the amount of the levied fine or penalty from the Contract amount.

T. **Agreement Date/Counterparts:** The date of this Agreement is intended as and for a date for the convenient identification of this Agreement and is not intended to indicate that this Agreement was necessarily executed and delivered on said date. This instrument may be executed in any number of counterparts, each of

which so executed shall be deemed an original, but all such counterparts shall together constitute but one and the same instrument.

U. Use of Words and Phrases. The following words and phrases, where used in this document, shall be given the following and respective interpretations: "Herein," "hereby," "hereunder," "hereof," and other equivalent words refer to this document as an entirety and not solely to the particular portion hereof in which any such word is used.

The definitions set forth in any portion of this Agreement unless the text or context indicates differently shall be deemed applicable whether the words defined are herein used in the singular or the plural. Wherever used herein any pronoun or pronouns shall be deemed to include both singular and plural and to cover all genders.

V. Severability. Each provision of this agreement shall be considered to be severable and, if for any reason, any such provision or any part thereof, is determined to be invalid and contrary to any existing or future applicable law, such invalidity shall not impair the operation of or affect those portions of this agreement that are valid, but this agreement shall be construed and enforced in all respects as if the invalid or unenforceable provision or part thereof had been omitted.

IN TESTIMONY WHEREOF, said Contractor has hereto affixed its signature and said City of Tuscaloosa has caused these presents to be executed by Walter Maddox, Mayor of the City of Tuscaloosa, and attested by the City Clerk, on the day and year first above written, in four counterparts, each of which shall, without proof or accounting for the other, be accepted as an original.

PARTY OF THE FIRST PART

ATTEST

RYAN SHIRLEY, INC.
Contractor

BY: RYAN SHIRLEY, INC.
ITS: PRESIDENT

CITY OF TUSCALOOSA, A MUNICIPAL CORPORATION/PARTY OF THE SECOND PART/CITY, OWNER

ATTEST:

Asst. City Clerk

Walter Maddox, Mayor

STATE OF ALABAMA)
COUNTY OF TUSCALOOSA)

I, Karen Kelley, a Notary Public in and for said State at Large, hereby certify that RYAN SHIRLEY, who is named as PRESIDENT, is signed to the foregoing document, and,

- [X] Who is known to me, or
- [ ] Whose identity I proved on the basis of _____, or
- [ ] Whose identity I proved on the oath/affirmation of _____, a creditable witness to the signer of the above document

and that being informed of the contents of the document, he/she, as such officer and with full authority, executed the same voluntarily on the day the same bears date.

Given under my hand and official seal this the _____ day of _____, 20_____.

KAREN M. KELLEY NOTARY PUBLIC ALABAMA STATE AT LARGE

Karen Kelley
Notary Public.

My Commission Expires: 3.16.16

STATE OF ALABAMA)
COUNTY OF TUSCALOOSA)

Before me, the undersigned, a Notary Public in and for the State of Alabama, appeared Walter Maddox, Mayor of the City of Tuscaloosa and acknowledged that his signature is affixed hereto in his capacity as Mayor of the City of Tuscaloosa.

Done this the 20th day of May, 20 15.

Vickie Gilliland
Notary Public in and for the
State of Alabama at Large

My Commission Expires: 2/3/19

[END OF CONTRACT AGREEMENT OFFICE OF THE CITY ATTORNEY]

CITY OF TUSCALOOSA PUBLIC WORKS CONTRACT DOCUMENTS
SECTION SIX
PERFORMANCE BONDS
(2015)

STATE OF ALABAMA)
TUSCALOOSA, COUNTY)

KNOWN ALL MEN BY THESE PRESENTS, that we, RYAN SHIRLEY, INC as principal and WESTERN SURETY COMPANY (hereinafter called the "Surety"), as surety, do hereby acknowledge ourselves indebted and firmly bound and held unto the City of Tuscaloosa, Alabama, (hereinafter called the "City") a municipal corporation existing under and by virtue of the laws of the State of Alabama, for the use and benefit of those entitled thereto, in the penal sum of TWO MILLION TWO HUNDRED THIRTY ONE THOUSAND SEVEN HUNDRED EIGHT SIX DOLLARS & 77/100 ($2,231,786.77) for the payment of which well and truly be made in lawful money of the United States, we do hereby bind ourselves, our successors and assigns and personal representatives, jointly and severally, firmly by the presents.

BUT THE CONDITION OF THE FOREGOING OBLIGATION OR BOND IS THIS:

WHEREAS, the City has entered into a certain written contract with said Contractor for the ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B, PROJECT NO. A12-1324 in accordance with contract documents therefore on file in the Office of the CITY ENGINEER at the price of, to-wit: TWO MILLION TWO HUNDRED THIRTY ONE THOUSAND SEVEN HUNDRED EIGHT SIX DOLLARS & 77/100 ($2,231,786.77) as more fully appears in said written contract bearing the date of MAY 13th, 2015, which contract is hereby referred to and made a part hereof to the same extent as if set out herein in full.

NOW, THEREFORE, if the Contractor shall fully and faithfully perform all the undertakings and obligations under the said agreement or contract herein before referred to and shall fully indemnify and save harmless the said City from all costs and damages whatsoever which it may suffer by reason of any failure on the part of said Contractor so to do, and shall fully reimburse and repay the said City any and all outlay and expense which it may incur in making good any such default, and shall guarantee all workmanship against defects for a period of one year, this obligation or bond shall be null and void, otherwise it shall remain in full force and effect.

And, for value received it is hereby stipulated and agreed that no change, extension of time, alteration or addition to the terms of said agreement or contract or in the work to be performed thereunder or the specifications accompanying the same shall in any wise affect the obligations of the principal or of the surety under this bond, and notice is hereby waived of any such change, extension of time, alternative of or addition to the terms of the agreement or contract or to the work or to the specifications.

IN WITNESS WHEREOF, the said Contractor has hereunder affixed its signature and said Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers on the 13th day of MAY, 2015.

RYAN SHIRLEY, INC.
Principal
By _____
Title PRESIDENT

WESTERN SURETY COMPANY
Surety
By _____
J. David Fitts, Attorney-In-Fact
Title

ATTEST:

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

T Gary Fitts, J David Fitts, Charles F Horton Jr, Timothy L Donahue, R Forrest Fitts, Cheryl A Camak, Christina Krout, Individually

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

- In Unlimited Amounts -

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

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 31st day of July, 2013.

WESTERN SURETY COMPANY

Paul T. Bruflat, Vice President

State of South Dakota
County of Minnehaha } ss

On this 31st day of July, 2013, before me personally came Paul T. Bruflat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires
June 23, 2015

J. MOHR
NOTARY PUBLIC
SOUTH DAKOTA

J. Mohr, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 13th day of May, 2015

WESTERN SURETY COMPANY

L. Nelson, Assistant Secretary

Form F4280-7-2012

Authorizing By-Law

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

CITY OF TUSCALOOSA PUBLIC WORKS CONTRACT DOCUMENTS
SECTION SEVEN
LABOR AND MATERIAL BOND
(2015)

KNOWN ALL MEN BY THESE PRESENTS, that we, RYAN SHIRLEY, INC. (hereinafter called the "Contractor") of NORTHPORT, ALABAMA as principal and WESTERN SURETY COMPANY (hereinafter called the "Surety"), as surety, do hereby acknowledge ourselves indebted and firmly bound and held unto the City of Tuscaloosa, Alabama, (hereinafter called the "City"), a municipal corporation, existing under and by virtue of the Laws of the State of Alabama, for the use and benefit of those entitled thereto, in the penal sum of TWO MILLION TWO HUNDRED THIRTY ONE THOUSAND SEVEN HUNDRED EIGHT SIX DOLLARS & 77/100 ($2,231,786.77) for the payment of which well and truly to be made in lawful money of the United States, we do hereby bind ourselves, or successors, assigns and personal representatives, jointly and severally, firmly by these presents.

BUT THE CONDITION OF THE FOREGOING OBLIGATION OR BOND IS THIS:

WHEREAS: the City has entered into a certain written contract with said Contractor for the ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B, PROJECT NO. A12-1324, in accordance with contract documents therefore on file in the Office of the CITY ENGINEER at the price of, to-wit:
TWO MILLION TWO HUNDRED THIRTY ONE THOUSAND SEVEN HUNDRED EIGHT SIX DOLLARS & 77/100 ($2,231,786.77) as more fully appears in said written contract bearing date of MAY 13th ,2015, which contract is hereby referred to and made a part hereof to the same extent as if set out herein in full.

NOW, THEREFORE, if said Principal and all subcontractors to whom any portion of the work provided for in said contract is sublet and all assignees of said Principal and of such subcontractors shall promptly make payment to all persons supplying him or them with labor, foodstuffs, or supplies for or in the prosecution of the work provided for in such contract, or in any amendment or extension of or addition to said contract, and for the payment of reasonable attorney's fees, incurred by the claimant or claimants in suits on said bond, then the above obligation shall be void; otherwise, it shall remain in full force and effect.

PROVIDED, however, that this bond is subject to the following conditions and limitations:

(a) Any person, firm or corporation that has furnished labor, foodstuffs, or supplies for or in the prosecution of the work provided for in said contract, payment for which has not been made, shall have a direct right of action in his or their name or names against the principal and surety on this bond, which right of action shall be asserted in a proceeding, instituted in the county in which the work provided for in said contract is to be performed and in any county in which said Principal or Surety does business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or claimants for his or their use and benefit against said Principal and Surety or either of them (but not later than one year after the final settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

(b) In addition to any other legal mode of service, service of summons and other process in suits on this bond brought in Tuscaloosa County may be had on the Principal or the Surety in accordance with Title 27, Chapter 3, Section 24 of the Ala. Code (1975) by serving a copy of the summons and complaint or other pleading or process, with the Commissioner of Insurance of the State of Alabama or his/ her designee and the Principal and Surety agree to be bound by such mode of service above described and consents that such service shall be the same as personal service on the Principal or Surety.

(c) The Surety shall not be liable hereunder for any damages or compensation recoverable under any workmen's compensation or employer's liability statute.

(d) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than one year after the final settlement of said contract.

(e) This bond is given pursuant to the terms of Title 39, Chapter 1, Section 1 of the Ala. Code (1975), and all the provisions of law with reference to this character of bond as set forth in said section or as may hereinafter be enacted are hereby made a part hereof to the same extent as if set out herein in full.

IN WITNESS WHEREOF, the said Contractor has hereunder affixed its signature and said Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers on the day of MAY 13th, 2015.

RYAN SHIRLEY, INC.
Principal

By: _____

PRESIDENT
Title

WESTERN SURETY COMPANY
Surety

By: _____

J. David Fitts, Attorney-In-Fact
Title

ATTEST:

_____

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

T Gary Fitts, J David Fitts, Charles F Horton Jr, Timothy L Donahue, R Forrest Fitts, Cheryl A Camak, Christina Krout, Individually

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

- In Unlimited Amounts -

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

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 31st day of July, 2013.

WESTERN SURETY COMPANY

Paul T. Bruflat, Vice President

State of South Dakota
County of Minnehaha } ss

On this 31st day of July, 2013, before me personally came Paul T. Bruflat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires

June 23, 2015

J. MOHR
SEAL NOTARY PUBLIC SOUTH DAKOTA SEAL

J. Mohr, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 13th day of May, 2015

WESTERN SURETY COMPANY

L. Nelson, Assistant Secretary

Form F4280-7-2012

Authorizing By-Law

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

SHIRR-1 OP ID: AC

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 05/14/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Fitts Agency, Inc.
P O Box 20007
Tuscaloosa, AL 35402
Jeffrey S. Hogg, CLCS, CPIA

CONTACT NAME: Tancy Champion
PHONE (A/C, No, Ext): 205-342-3554 FAX (A/C, No): 205-342-3467
E-MAIL ADDRESS: tchampion@fittsagency.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Penn National Insurance	32441
INSURER B: Alabama Home Builders SIF	
INSURER C: New York Marine and General	
INSURER D:	
INSURER E:	
INSURER F:	

INSURED Ryan Shirley, Inc.
PO Drawer 657
Northport, AL 35476

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER POLICY PRO-JECT LOC			CL9 0693646	02/18/2015	02/18/2016	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 500,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS / SCHEDULED AUTOS X HIRED AUTOS / X NON-OWNED AUTOS			AU90693646	02/18/2015	02/18/2016	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (PER ACCIDENT)	$ 1,000,000 $ $ $
A	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED X RETENTION $ 10,000			UL9 0693646	02/18/2015	02/18/2016	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
B C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		06524 WC2015EPP00309	01/01/2015 01/01/2015	01/01/2016 01/01/2016	X WC STATU-TORY LIMITS / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
A	Equipment Floater			CL90693646	02/18/2015	02/18/2016	Scheduled	2,695,550
A	Installatn Floater			CL90693646	02/18/2015	02/18/2016	Limit	100,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Project: Alabama Revitalization Infrastructure Project Phase 1B #A12-1324
City of Tuscaloosa, its officers, agents & employees are listed as additional insured with respect to General Liability as required by written contract. Waiver of Subrogation applies to General Liability in favor of Certificate holder if required by written contract. 30 days NOC applies;

CERTIFICATE HOLDER

City of Tuscaloosa
PO BOX 2089
Tuscaloosa, AL 35403

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

J. Daniel Fitts

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except 10 days for non payment of premium.

STATE OF ALABAMA)
TUSCALOOSA COUNTY)
CITY OF TUSCALOOSA)

CONTRACTOR'S RELEASE OF LIENS AND CLAIMS
Project No. A12-1324

THIS Contractor's Release of Liens and Claims is made in accordance with that certain contract between the CITY OF TUSCALOOSA, ALABAMA, a Municipal Corporation, (hereinafter the "City") and RYAN SHIRLEY, INC. (hereinafter the "Contractor" or undersigned), for a project known as ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B in regard to which the undersigned warrants and certifies to the City as follows:

1. That there are no amounts owed by the undersigned or any tier of subcontractor or supplier of the undersigned which could become the basis for a lien or suit against the properties of the Contractor or the property of the City or any funds held by or in the possession of the City in regard to the Project.

2. That the undersigned has satisfied all claims and indebtedness of every nature in any way connected with the work, including (but not limited to) all payrolls, amounts due to subcontractors, accounts for labor performed and materials furnished, incidental services, liens and judgments.

3. In consideration of the receipt by the undersigned from the City of final payment under the above mentioned contract, the undersigned hereby waives and relinquishes all liens and claims of lien which the undersigned may have against the aforesaid property or funds; and further, undersigned also hereby remises, releases and forever discharges the City, its officers, agents and employees, of any and all claims, demands and causes of action whatsoever which the undersigned has, might have or could have against the City by reason of or arising out of the above-mentioned contract. The undersigned further agrees to indemnify and hold the City, its officers, agents and employees harmless against any and all claims or demands from subcontractors or suppliers arising out of the aforementioned contract.

IN WITNESS WHEREOF, the undersigned has duly executed this release this the _____ day of _____ _____, 20_____.

CONTRACTOR:
RYAN SHIRLEY, INC.
BY: _____
TITLE: PRESIDENT

I, _____, after being duly sworn, depose and say as follows: That I am the _____ of the _____ Corporation and hereby certify that I am duly authorized to execute this Contractor's Release of Liens and Claims.

STATE OF ALABAMA)
TUSCALOOSA COUNTY)
Sworn to and subscribed before me on this the _____ day of _____, 20_____.

_____
Notary Public

_____
CONSENT OF SURETY:

_____
SURETY

BY: _____
ATTORNEY-IN-FACT FOR SURETY

CITY OF TUSCALOOSA PUBLIC WORKS
ROOFING GUARANTEE
Project No. A12-1324

Name of Project N/A

Location TUSCALOOSA, ALABAMA

Owner CITY OF TUSCALOOSA

General Contractor _____

Address _____

Date of Acceptance _____ Date of Expiration _____

1. The General Contractor does hereby certify to the City of Tuscaloosa that the roofing work included in this contract was installed in strict accordance with all requirements of the plans and specifications.

2. The General Contractor does hereby guarantee the roofing and associated work including all flashing, both composition and metal, against leaks due to faulty workmanship for a period of five (5) years and against leaks due to faulty or defective materials for fifteen (15) years, starting on the date of acceptance of the Project by the City.

3. Subject to the terms and conditions listed below, the General Contractor guarantees that during the Guarantee Period he will at his own cost and expense, make or cause to be made such repairs to, or replacements of said work, as are necessary to correct faulty and defective work and materials as are necessary to maintain said work in watertight conditions, and further, to respond on or within three (3) calendar days upon proper notification of leaks or defects by the City or Architect.

A. Specifically excluded from this Guarantee are damages to the work, other parts of the building and building contents caused by: Lightning, windstorm, hail storm and other unusual phenomena of elements; and, Fire. When the work has been damaged by any of the foregoing causes, the Guarantee shall be null and void until such damage has been repaired by the General Contractor, and until the cost and expense thereof has been paid by the City or by the responsible party so designated.

B. During the Guarantee Period, if the City allows alteration of the work by anyone other than the General Contractor, including cutting, patching and maintenance in connection with penetrations, and positioning of anything on the roof, this Guarantee shall become null and void upon the date of said alterations. If the City engages the General Contractor to perform said alterations, the Guarantee shall not become null and void, unless the General Contractor, prior to proceeding with said work, shall have notified the City in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the work, thereby reasonably justifying a termination of this Guarantee.

C. Future building additions will not void this guarantee, except for that portion of the future addition that might affect the work under this contract at the point of connection of the roof areas, and any damage caused by such addition. If this contract is for roofing of an addition to an existing building, then this guarantee covers the work involved at the point of connection with the existing roof.

D. During the Guarantee Period, if the original use of the roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray cooled surface, flooded basin, or other use of service more severe than originally specified, this Guarantee shall become null and void upon the date of said change.

E. The City shall promptly notify the General Contractor of observed, known or suspected leaks, defects or deterioration, and shall afford reasonable opportunity for the General Contractor to inspect the work, and to examine the evidence of such leaks, defects or deterioration.

IN WITNESS THEREOF, this instrument has been duly executed this the___ day of _____, 20___.

_____
General Contractor's Authorized Signature
NAME AND TITLE _____

CITY OF TUSCALOOSA
ASBESTOS AFFIDAVIT
Project No. A12-1324

DATE: _____

BUILDING OWNER: _____

_____

_____

PROJECT: ALBERTA REVITALIZATION INFRASTRUCTURE

PROJECT PHASE 1B

TO WHOM IT MAY CONCERN:

The undersigned certifies that to the best of his knowledge, no products containing asbestos have been included in the construction of the captioned Project. Special care was exercised to avoid asbestos-containing products, including reviewing product data sheets, reviewing product labels, and visually verifying products in the field. Special care to avoid asbestos has been used in the selection, purchase, and installation of products, including, but not limited to, the following: concrete, batt insulation, roof insulation, building felts, mastics, waterproofing products, adhesives, resilient flooring products, ceiling tiles, interior coatings, exterior coatings, roofing, pipe insulation, duct insulation, and pre-assembled items of equipment.

Respectfully submitted,

_____
Signature

_____ _____
Typed Name Title

_____
Firm Name

_____
Address

_____

Sworn to and subscribed before me on this the _____
day of _____, 20_____.

_____ _____
Notary Public. County, State

My Commission Expires:

_____

PROJECT NAME ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B

PROJECT NO. A12-1324

CONTRACTOR/INSURED _____

STATE OF ALABAMA)
)
TUSCALOOSA COUNTY)

AGENT'S VERIFICATION OF CONTRACTOR'S INSURANCE

This is to certify to the City of Tuscaloosa, Alabama, a Municipal Corporation, that the Contractor in the above referenced Project does possess a policy or policies of insurance reflected on the Certificate of Insurance issued for the Project by the undersigned agency of which I am an authorized representative. I have read the contract document as it relates to insurance requirements and said Contractor's insurance is effective as of the dates stated in the certificate and meets or exceeds all ratings, limits, and amounts as required by the same.

This the _____ day of _____, 20_____.

AGENCY: _____

BY: _____

ITS: _____

STATE OF ALABAMA)
TUSCALOOSA COUNTY)

NOTICE OF CONDITIONAL BID AWARD
CITY OF TUSCALOOSA, ALABAMA

VIA FACSIMILE: _____
TO: RYAN SHIRLEY, INC.
P.O. BOX 657
NORTHPORT, AL 35476

Project Name: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B
Project Number: A12-1324
Date: MAY 13, 2015

You are here notified pursuant to Ala. Code §39-2-6 (1975), that the City of Tuscaloosa has made a conditional bid award to you in regard to the above-referenced Project based upon your proposal of $2,231,786.77.

The above bid award ☒ Does ☐ Does Not include the following additive and/or deductive alternates as requested in the bid documents:

Additive Alternates		Deductive Alternates	
1. _____	($ _____)	1. PVC Sanitary Sewer Pipe	($ 39,960.23)
2. _____	($ _____)	2. _____	($ _____)
3. _____	($ _____)	3. _____	($ _____)

Pursuant to Ala. Code §39-2-8 (1975), you are required to enter into a written contract on the form included in the proposal, plans and specifications, furnish a performance bond and a payment bond executed by a surety company authorized and qualified to make such bonds in the State of Alabama, in the amount required in the bid documents, and present evidence of insurance also as required by the bid documents, within the period of time stated therein or, if no period of time is stated, within thirty (30) days after the prescribed forms have been presented to you for signature.

Pursuant to Ala. Code §39-2-11 (1975), if you fail to execute the contract and furnish acceptable contract securities and evidence of insurance as required by the bid documents within the period of time as set forth, the awarding authority may retain all or a part of the proposal guarantee and may award the contract to the second lowest responsible responsive bidder. Under such circumstances, the owner will be entitled to consider all rights arising out of its acceptance of your proposal as abandoned.

DONE this 13th day of MAY, 2015.

CITY OF TUSCALOOSA, ALABAMA
A MUNICIPAL CORPORATION
Post Office Box 2089
Tuscaloosa, Alabama 35403-2089

By: WALKER ASOCIATES, INC. - Bradley Porter
City's Representative/Engineer/Architect

ACCEPTANCE OF NOTICE

I, on behalf of the above named contractor, do hereby accept receipt of the above notice of conditional bid award and acknowledge the contents of the same on this the 13th day of MAY 2015.

CONTRACTOR:

By its: PRESIDENT

STATE OF ALABAMA)
TUSCALOOSA COUNTY)

NOTICE OF CONDITIONAL BID AWARD
CITY OF TUSCALOOSA, ALABAMA

Via FACSIMILE:

TO: RYAN HUGHES, INC. Project Name: ALSCO/CITY OF TUSCALOOSA

P.O. BOX 2627 Project Number: 2015-12

BOISE, IDAHO 83701 Date: MAY 13, 2015

You are hereby notified pursuant to Ala. Code §39-2-6 (1975) that the City of Tuscaloosa has made conditional bid award to you in response to the proposals dated May 8, 2015 based upon your proposal of $2,249,736.17.

The above bid award is [X] Base [ ] Base Plus Alternates No. ____ through No. ____.

Additive Alternates Deductive Alternates

1. _____ ($ _____) 1. _____ ($ _____)

2. _____ ($ _____) 2. _____ ($ _____)

3. _____ ($ _____) 3. _____ ($ _____)

Pursuant to Ala. Code §39-2-6 (1975), you are required to enter into a written contract on the form included in the proposal documents and furnish a performance bond and payment bond, each in the amount of 100% of the contract price, executed by a surety company authorized and qualified to transact such business in the State of Alabama, within ten (10) days after the date of this notice of award. Failure to enter into such contract and furnish such bonds within the period of time stated therein or if no period of time is stated, within ten (10) days after the prescribed forms are presented to you for signature, may result in the annulment of the award and the forfeiture of your bid security.

Pursuant to Ala. Code §39-2-6 (1975), if you fail to execute the contract and furnish acceptable contract bonds or any other documents required by the bid proposal within the period of time as set forth, the awarding authority may award the contract to the next lowest responsible bidder or readvertise the project for bids. Upon such failure, the owner will be entitled to collect all liquidated damages set out in the bid proposal documents.

DONE this 13th day of MAY, 2015.

CITY OF TUSCALOOSA, ALABAMA
A MUNICIPAL CORPORATION
Post Office Box 2089
Tuscaloosa, Alabama 35403-2089

By: _____
City's Representative/Engineer/Architect

ACCEPTANCE OF NOTICE

I, on Behalf of the above named contractor, do hereby accept receipt of the above notice of conditional bid award and acknowledge the receipt of a signed copy of this notice on this the 13th day of MAY, 2015.

CONTRACTOR

By: _____
Its: PRESIDENT

STATE OF ALABAMA)
TUSCALOOSA COUNTY)
CITY OF TUSCALOOSA)

NOTICE TO PROCEED WITH PUBLIC WORKS PROJECT
CITY OF TUSCALOOSA, ALABAMA

Project Name: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B

Project No.: A12-1324
Date: 05/28/15

TO: RYAN SHIRLEY, INC.
P.O. BOX 657
NORTHPORT, AL 35476

Pursuant to Ala. Code §39-2-10 (1975), you are hereby notified to immediately commence work in full accordance with the terms and conditions of the Contract Documents in the above referenced Project, dated MAY 13th, 2015, on or before June 1, 2015, and you are to complete the work within the time specified therein.

CITY OF TUSCALOOSA, ALABAMA
A MUNICIPAL CORPORATION
Post Office Box 2089
Tuscaloosa, Alabama 35403-2089

By: _____
City's Representative

ACCEPTANCE OF NOTICE

I, on behalf of the above named contractor, do hereby accept receipt of the above notice to proceed with the referenced Project and acknowledge the contents of the same on this the 28th day of MAY 2015.

CONTRACTOR: RYAN SHIRLEY, INC.

By Its: PRESIDENT

STATE OF ALABAMA)
TUSCALOOSA COUNTY)
CITY OF TUSCALOOSA)

NOTICE TO PROCEED WITH PUBLIC WORKS PROJECT
CITY OF TUSCALOOSA, ALABAMA

Project Name: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B

Project No.: A13-1324
Date: 05/26/15

TO: RYAN SHIRLEY, INC.
P.O. BOX 667
NORTHPORT, AL 35476

Pursuant to Ala. Code §39-2-10 (1975), you are hereby notified to immediately commence work in full accordance with the terms and conditions of the Contract Documents in the above referenced Project, dated MAY 12th, 2015 on or before June 12, 2015, and you are to complete the work within the time specified therein.

CITY OF TUSCALOOSA, ALABAMA
A MUNICIPAL CORPORATION
Post Office Box 2089
Tuscaloosa, Alabama 35403-2089

By: _____
City's Representative

ACCEPTANCE OF NOTICE

I, on behalf of the above named contractor, do hereby accept receipt of the above notice to proceed with the referenced Project and acknowledge the contents of the same on this the 26th day of MAY, 2015.

CONTRACTOR: RYAN SHIRLEY, INC.

By its: PRESIDENT

CONTRACT CHANGE ORDER NO. ___

City of Tuscaloosa, Office of the City Attorney

DATE: _____ **PROJECT:** **ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B**

TO: **RYAN SHIRLEY, INC.**
(Contractor)

TERMS: You are hereby authorized, subject to the provisions of your Contract for this Project, to make the following changes thereto in accordance with the attached Change Order Request and supporting documents and to:

FURNISH the necessary labor, materials and equipment to:

_____
_____
_____
_____
_____

TOTAL ADDITION OR REDUCTION TO CONTRACT PRICE:

(Note: Numbers in parentheses are deductions).

ORIGINAL CONTRACT PRICE	$_____
LESS CONTINGENCY/ALLOWANCE	$_____
NET ORIGINAL CONTRACT PRICE	$_____
Net total of previous Change Orders	$_____
Previous revised Contract Price	$_____
This Change Order No. _____ ☐Add ☐Deduct	$_____
Revised Contract Price this date	$_____

Extension of time resulting from this Change Order _____ (Indicate number of calendar days).

The amount of this Change Order will be the responsibility of _____

This Contract Modification constitutes full and mutual accord and satisfaction for all time and all cost related to this change. By acceptance of this Contract Modification, the Contractor hereby agrees that the modification represents an equitable adjustment to the Contract, and further, agrees to waive all right to file any further claims or changes arising out of or as a result of this change, or the accumulation of executed Contract Modifications on this Contract.

The Contractor and Owner(s) hereby agree to the terms of this Change Order as contained herein.

CONSENT OF SURETY

_____
(Company)

By: _____

CONTRACTING PARTIES

RYAN SHIRLEY, INC.
(Contractor)

By: _____
(Authorized Representative)

RECOMMENDED

By: WALKER ASSOCIATES, INC.

_____
(Design Engineer or Architect)

CITY OF TUSCALOOSA

By: _____
(Mayor)

CITY OF TUSCALOOSA
OFFICE OF THE CITY ATTORNEY

CHANGE ORDER REQUEST

OWNER: CITY OF TUSCALOOSA

ARCHITECT/ENGINEER: WALKER ASSOCIATES, INC.

CONTRACTOR: RYAN SHIRLEY, INC.

PROJECT: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE IB

CHANGE ORDER REQUEST NO. _____ **DATE:** _____

---

1. DESCRIPTION OF CHANGE:

2. CHANGE ORDER COSTS: _____

Proposal Attached _____ **Cost Estimated/Proposal Required**

Item	*Quantity*	*Material Unit Price*	*Labor (Hours)*	*Labor Unit Price*	*Sub-Total Cost*
a.					
b.					
c.					
d.					
e.					
f.*					
				TOTAL:	

*If more than 6 items, provide attachments.

3. INSTITUTED BY:

4. JUSTIFICATION OF NEED:

5. JUSTIFICATION OF CHANGE ORDER VERSUS COMPETITIVE BIDDING:

6. COSTS REVIEW:

7. THIS CHANGE ORDER IS SUBMITTED FOR REVIEW AND APPROVAL AND IS CLASSIFIED AS THE FOLLOWING TYPE:

- ☐ Minor change of a total monetary value less than required for competitive bidding.
- ☐ Changes for matters relatively minor and incidental to the original contract necessitated by unforeseeable circumstances arising during the course of work.
- ☐ Emergencies arising during the course of work.
- ☐ Change or alternates provided for in the original bidding where there is no difference in price of the Change Order from the original best bid on the Alternate.
- ☐ Change of relatively minor terms not contemplated when the plans and specifications were prepared and the Project was bid and which are in the public interest and do not exceed 10% of the Contract Price.

8. EXTENSION OF TIME REQUESTED: Calendar Days:

RECOMMENDED:

BY: _____
Tuscaloosa's Consulting Engineer/Architect

BY: _____
City Representative

APPROVED:

BY: _____
Contractor

BY: _____
Owner's Legal Advisor

BY: _____
Owner's Authorized Representative

STATE OF ALABAMA)
COUNTY OF TUSCALOOSA)
CITY OF TUSCALOOSA)

LEGAL NOTICE
NOTICE OF COMPLETION OF PUBLIC WORKS PROJECT
(Over $50,000)

Pursuant to Ala. Code §39-1-1 (1975), notice is hereby given that RYAN SHIRLEY, INC. (Name of Company) has completed its contract with the City of Tuscaloosa, Alabama, for the ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B (Name of Project) located at TUSCALOOSA, ALABAMA (Location of the Project). This notice will be published for a period of four (4) successive weeks beginning: _____ (Date)

A final settlement will not be made upon the contract until the expiration of thirty (30) days after completion of notice. Any person or firm having claims on said Project for materials or labor should contact the above contractor at:

_____

_____
(Address of Contractor)

in the time and manner as required by law.

CITY OF TUSCALOOSA
OFFICE OF THE CITY ATTORNEY
P. O. BOX 2089
TUSCALOOSA, ALABAMA 35403

DATED: _____

STATE OF ALABAMA)
COUNTY OF TUSCALOOSA)
CITY OF TUSCALOOSA)

LEGAL NOTICE

NOTICE OF COMPLETION OF PUBLIC WORKS PROJECT
(Over $50,000)

(Optional: To Alabama Code §39-1-1 (1975), unless is hereby given that

_____ has contracted to perform work
(Name of Contractor)

City of Tuscaloosa, Alabama, for the ALBERTA REVITALIZATION/INFRASTRUCTURE PROJECT, as
(Name of Project)

located at TUSCALOOSA, ALABAMA. This notice will be
(Location of Project)

published for a period of four (4) successive weeks beginning _____
(Date)

A final settlement will not be made upon the contract until the expiration of thirty (30) days after completion of notice. Any person or firm having claims on said Project for materials or labor should contact the above contractor at:

_____

_____
(Address of Contractor)

in the time and manner as required by law.

CITY OF TUSCALOOSA
OFFICE OF THE CITY ATTORNEY
P.O. BOX 2089
TUSCALOOSA, ALABAMA 35403

DATED: _____

CITY OF TUSCALOOSA
SPECIAL CONDITIONS FOR
FEDERALLY FUNDED CONTRACTS

I. DEFINITIONS

"Construction Contract" means a contract for construction, rehabilitation, alteration, and/or repair, including painting and decorating.

Contractor" means an entity that has entered into an agreement with the local government for the performance of specific work on a project or activity, the provision of professional services, or for the supply of equipment and/or materials.

"HUD" means U.S. Department of Housing and Urban Development (Federal Agency).

"Local Government" means the City of Tuscaloosa.

"Program" means the Community Development Block Grant Disaster Recovery (CDBG-DR) (Federal Program) operated under the provisions of HUD

"Projects/Activities" means those undertakings which are included in the Program and are funded wholly or in part by CDBG-DR and HUD

"Project Area" means the corporate limits of the City of Tuscaloosa.

"Subcontractor" means a person, firm or corporation supplying services or labor and materials or only labor or only materials for work at the site of the project, for and under contract or agreement with the Contractor.

II. CONFLICT OF INTEREST

A. Interest of Members of the Local Government. No officer, employee or agent of the local government who exercises any function or responsibilities in connection with the planning and carrying out of the program, or any other person who exercises any functions or responsibilities in connection with the program, shall have any personal financial interest, direct or indirect, in this contract, and the Contractor shall take appropriate steps to assure compliance.

B. The Contractor agrees that it will incorporate into every subcontract required in writing the following provision: Interest of Contractor and Employees. The Contractor agrees that no person who presently exercises any functions or responsibilities in connection with the program, has any personal financial interest, direct or indirect, in this contract. The Contractor further covenants that he presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of his services hereunder.

The Contractor further covenants that in the performance of this contract no person having any conflicting interest shall be employed. Any interest on the part of the Contractor or his employees must be disclosed to the City. Provided, however, that this paragraph shall be interpreted in such a manner so as not to unreasonably impede the statutory requirement that maximum opportunity be provided for employment of and participation by low income residents of the area.

C. Provisions of the Hatch Act. Neither the funds provided by this agreement nor the personnel

employed in the administration of the agreed upon work shall be in any way or to any extent engaged in the conduct of political activities in contravention of Chapter 15 of Title 5, U. S. Code.

III. **EQUAL OPPORTUNITY REQUIREMENTS:** During the performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age, or disability. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, age, or disability. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment, or recruitment advertising; layoff or termination; rates of pay or other forms of compensations; and selection of training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, or disability.

3. The Contractor will send to each labor union or representative of workers with which he has collective bargaining agreement or other contract or understanding, a notice advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The Contractor will furnish to the local government all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the local government, HUD, and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules regulations, and orders.

6. In the event of the Contractor's non-compliance with the nondiscrimination clauses of this agreement or with any of the said rules, regulations, or orders, this agreement may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further local government contracts in accordance with procedures authorized in Executive Order 11246 of September 24 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the City, Secretary of Labor, or as otherwise provided by law.

7. The Contractor will include the provisions of paragraph 1 through 6 above in every subcontract or purchase order unless exempted by rules, regulations, or orders of the local government or the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed as a means of enforcing such provisions, including sanctions for noncompliance: Provided however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the City, the Contractor may request the local government to enter into such litigation to protect the interests of the local government.

8. The Contractor agrees that it will assist and cooperate actively with the local government and the Secretary of Labor in obtaining the compliance of subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the local government and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the local government in the discharge of its primary responsibility for securing compliance.

9. The Contractor further agrees that it will refrain from entering into any contract or contract

modification subject to Executive Order 11246 of September 24, 1965, with a Contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order. In addition, the agency agrees that if it fails or refuses to comply with these undertakings, the local government may take any or all of the following actions: terminate or suspend in whole or in part this contract; refrain from extending any further assistance to the Contractor under the program with respect to which the failure or refusal occurred until satisfactory assurance of future compliance has been received from such Contractor.

10. Non-segregated Facilities. The Contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The Contractor covenants that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. As used in this paragraph, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise.

11. No person in the United States shall, on the ground of race, color, religion, sex, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity made possible by or resulting from this contract. The agency and each employer will comply with all requirements imposed by or pursuant to Title VI of the Civil Rights Act of 1964.

12. The Contractor shall maintain data which records its affirmation action in equal opportunity employment, including but not limited to employment, upgrading, demotions, transfers, recruitment or recruitment advertising, layoffs or terminations, pay or other compensation, and selection for training.

IV. LABOR STANDARDS PROVISIONS - CONSTRUCTION CONTRACTS ONLY

A. Contract Work Hours and Safety Standards Act

1. Overtime Requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any work-week in which he is employed on such work to work in excess of forty hours in any work-week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of forty hours in any work-week.
2. Violations; Liability for Unpaid Wages; Liquidated Damages. In the event of any violation of the clause set forth in subparagraph 1, the Contractor and any subcontractor responsible therefore shall be liable to any affected employee for his unpaid wages. In addition, such Contractor and subcontractor shall be liable to the City for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the clause set forth in subparagraph 1 in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work-week of forty hours without payment of the overtime wages required by the clause set forth in subparagraph 1.
3. Withholding for Unpaid Wages and Liquidated Damages. The local government may withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid

wages and liquidated damages.

B. Employment of Certain Persons Prohibited. No person under the age of sixteen years and no person who at the time, is serving sentence in a penal or correctional institution shall be employed on the work covered by this contract.

C. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the labor standards provisions of this contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceedings or has testified or is about to testify in any proceedings under or relating to the labor standards applicable under this contract.

D. Questions Concerning Certain Federal Statutes and Regulations. All questions arising under this contract which relate to the application or interpretation of the aforesaid Contract Work Hours and Safety Standards Act, the regulations issued by the Secretary of Labor, United States Department of Labor, pursuant to said Act, or the labor standards provisions of any other pertinent Federal statute, shall be referred, through the City of Tuscaloosa and the Secretary of Housing and Urban Development, to the Secretary of Labor, United States Department of Labor, for said Secretary's appropriate ruling or interpretation which shall be authoritative and may be relied upon for the purpose of this contract.

V. ENVIRONMENTAL PROTECTION REQUIREMENTS

A. The Contractor hereby agrees that any facility to be utilized in the performance of any nonexempt contract or subcontract shall not be a facility included on the list of Violating Facilities issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR 15.20.

B. The Contractor also agrees to comply with all the requirements of Section 114 of the Clean Air Act, as amended, (42 USC 1857c-8) and Section 308 of the Federal Water Pollution Control Act, as amended, (33 USC 1318) relating to inspection, monitoring, entry, reports and information, as well as all other requirements specified in said Section 114 and Section 308, and all regulations and guidelines issued thereunder.

C. As a condition of the award of the contract, the Contractor agrees to give prompt notice to the City of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

D. The Contractor agrees that it will include or cause to be included the criteria and requirements in subparagraph A through D of this section in every nonexempt subcontract and that it will take such action as the City or the EPS may direct as a means of enforcing such provisions.

VI. FINANCIAL MANAGEMENT: The Contractor shall maintain effective control over and accountability for all funds, property, and other assets that are provided for by this agreement. The Contractor shall adequately safeguard all such assets and shall assure that they are used solely for authorized purposes.

A. Ineligible Costs. In addition to any costs that are ineligible under other criteria included herein the following costs are specifically ineligible:

1. Bad Debts. Any loses arising from uncollected accounts and other claims, and related costs.
2. Contingencies. Contributions to a contingency reserve or any similar provisions for unforeseen events.
3. Contributions and Donations.
4. Entertainment. Costs of amusements, social activities, and incidental costs, such as meals, beverages, lodgings, and gratuities, relating to entertainment.
5. Fines and Penalties. Costs resulting from violations of or failure to comply with Federal,

State, and local laws and regulations.

6. Interest and Other Financial Costs. Interest on borrowing (however represented), bond discounts, cost of financing and refinancing operations, and legal and professional fees paid in connection herewith.
7. Legislative Expenses. Salaries and other expenses of local government bodies such as county supervisors, city councils, school boards, etc., whether incurred for purposes of legislation or executive direction.
8. Membership Expenses. Cost of membership in an organization which devotes a substantial part of its activities to influencing legislation.
9. Travel. Costs in excess of those allowed by the Contractor for its equivalent employees. In any case, the difference in cost between first-class air accommodations and less-than-first-class air accommodations are not available and is so documented.
10. Meeting Attendance. Costs of attending meetings which are not open for attendance on a non-segregated basis.

B. Property Management Standards. The Contractor's property management standards for non-expendable personal property acquired under this contract shall include the following procedural requirements:

1. Property records shall be maintained accurately and provide for: a description of the property; manufacturer's serial number or other identification number; acquisition data, cost, and source of property; percentage of Federal funds used in the purchase of property; location, use and condition of the property; and ultimate disposition data including sales price or the method used to determine current fair market value.
2. A physical inventory of property shall be taken and the results reconciled with the property records at least once each year to verify the existence, current utilization, and continued need for the property.
3. A control system shall be in effect to ensure adequate safeguards to prevent loss, damage, or theft to the property. Any loss, damage, or theft of non-expendable property shall be investigated and fully documented.
4. Adequate maintenance procedures shall be implemented to keep the property in good condition.

C. Procurement Standards

1. The Contractor shall maintain a code or standard of conduct which shall govern the performance of its officers, employees, or agents in contracting with and expending grant funds. Local government officers, employees, or agents shall neither solicit nor accept gratuities, favors, or anything of monetary value from Contractors or potential Contractors.
2. All procurement transactions regardless of whether negotiated or advertised and without regard to dollar value shall be conducted in a manner so as to provide maximum open and free competition.

VII. GENERAL REQUIREMENTS

A. Retention of Records. All records maintained by the Contractor that pertain to this agreement shall be retained by the Contractor for a period of three years or such longer period as the local government or HUD may require in specific cases.

B. Reports and Information. The Contractor, at such times as the local government may require, shall

furnish such statements, reports, records, data and information, as may be requested pertaining to matters covered by this agreement.

C. Audit Requirements. The local government, the Comptroller General of the United States, and/or _HUD_ (Federal Agency), or any of the duly authorized representatives shall have access to all tasks, accounts, records, reports, files and other papers or property of the Contractor pertaining to funds provided under this agreement for the purpose of making surveys, audits, examinations, excerpts, and transcripts. The Contractor's financial management system shall be audited at least once a year. Audits may be made at less frequency considering the nature, size and complexity of the activity. The Contractor shall implement a systematic method to assure timely and appropriate resolution of audit findings and recommendations.

D. Breach of Contract Terms and Conditions. In the event of the Contractor's noncompliance with the terms and conditions of this contract or with any of the said rules, regulations or orders, this contract may be canceled, terminated or suspended in whole or in part. Provided, that the right of the Contractor to proceed with this contract shall not be terminated or the Contractor charged with liquidated damages because of delays in the completion of the work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted, to acts of God, or of the public enemy, acts of the Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather or delays of subcontractors due to such causes, if the Contractor shall within ten days from the beginning of any such delay notify the City in writing of the cause of the delay. The City shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in the City's judgment, the findings of fact justify such an extension, and the City's findings of fact thereon shall be final and conclusive on the parties hereto, subject only to appeal, within thirty days, by the Contractor to the City whose decision on such appeal as to the facts of delay and the extension of time for completing the work shall be final and conclusive on the parties hereto.

E. Safety Standards. No Contractor or subcontractor contracting for any part of a construction contract shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety, as determined under construction safety and health standards promulgated by the Secretary of Labor.

F. Lead-based Paint Regulations. The construction or rehabilitation of residential structures with assistance provided under this contract is subject to the HUD Lead-based Paint regulations, 24 CFR part 35. Should this contract include activities involving the construction or rehabilitation of residential structures, the Contractor hereby agrees to comply with the regulations of 24 CFR part 35.

G. Subcontracts. The Contractor shall insert in any subcontracts all of the terms and conditions set forth in this contract and also a clause requiring the subcontractors to include these terms and conditions in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

H. Davis-Bacon. As applicable, Contractors shall comply with the Davis-Bacon Act (40 U.S.C. 276a to 276a-7) as supplemented by Department of Labor regulations (29 CFR Part 5), the provisions of which are incorporated by reference into this contract as if contained herein.

I. Debarment of contactors/subcontractors / City's right to monitor. All contracting and subcontracting agencies shall be actively registered in the sam.gov system and have a non-debarred status to perform work. The City of Tuscaloosa shall have all rights to any and all documentation related to the project. Periodic monitoring visits will be performed by City of Tuscaloosa staff to ensure all federal and contract requirements are followed.

J. Green Building Standard for Replacement and New Construction of Residential Housing. Contractors must meet the Green Building Standard in this subparagraph for: (i) all new construction of residential buildings; and (ii) all replacement of substantially-damaged residential buildings. Replacement of residential buildings may include reconstruction (i.e., demolishing and re-building a housing unit on the same lot in substantially

the same manner) and may include chances to structural elements such as flooring systems, columns or load bearing interior or exterior walls. For purposes of this Notice, the Green Building Standard means the contractor will require that all construction covered by subparagraph, above, meet an industry-recognized standard that has achieved certification under at least one of the following programs (i) ENERGY STAR (Certified Homes or Multifamily High Rise); (ii) Enterprise Green Communities; (iii) LEED (NC, Homes, Midrise, Existing Buildings O&M, or Neighborhood Development); (iv) ICC-700 National Green Building Standard; (v) EPA Indoor AirPlus (ENERGY STAR a prerequisite); or (vi) any other equivalent comprehensive green building program, including regional programs. Standards for rehabilitation of non-substantially-damaged residential buildings: For rehabilitation other than that described in subparagraph, above, contractors must follow the guidelines specified in the HUD CPD Green Building Retrofit Checklist, available on the CPD Disaster Recovery Web site. Contractors must apply these guidelines to the extent applicable to the rehabilitation work undertaken, including the use of mold resistant products when replacing surfaces such as drywall. When older or obsolete products are replaced as part of the rehabilitation work, rehabilitation is required to use ENERGY STAR- labeled, WaterSense labeled, or federal Energy Management Program (FEMP)- designated products and appliances. Implementation: For construction projects completed under construction, or under contract prior to the date that federal assistance was approved for the project the contractor is encouraged to apply the applicable standards to the extent feasible but the Green Building Standard is not required; (ii) for specific which an ENERGY STAR-or-WaterSense-labeled or FEMP-designated product does not exist, the requirement to use such products does not apply. The City encourages contractors to implement green infrastructure policies to the extent practicable.

VIII. **ADECA-FUNDED CONTRACTS:** The Contractor shall include the following provisions in all construction contracts funded by the Alabama Department of Economic and Community Affairs (ADECA). For all ADECA-funded construction contracts, in the event the provisions contained in this section conflict with provisions contained elsewhere in this document, the provisions contained in this section shall prevail.

A. Section 109 Clause, Housing and Community Development Act of 1974. No person in the United States shall on the grounds of race, color, national origin or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under this title.

B. Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246) (applicable to contract/subcontracts exceeding $10,000). Contractor's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for Minority Participation (Insert Goals)	Goals for Female Participation (Insert Goals)

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted) performed in the covered area. If the Contractor performs construction work in a geographic area located outside of the covered area, it shall apply the goals established for such geographic area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its Federally involved and non-Federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area

where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the Contract, the Executive Order and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

C. "Section 3" Compliance in the Provision of Training, Employment and Business Opportunities.

1. The work to be performed under this Contract is a project assisted under a program providing direct Federal financial assistance from the Department of Housing and Urban Development and is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12, U.S.C. 1701u. Section 3 requires that to the greatest extent feasible, opportunities for training and employment be given lower income residents of the project area and contracts for work in connection with the project be awarded to business concerns which are located in, or owned in substantial part by, persons residing in the area of the project.

2. The parties to this Contract will comply with the provisions of said Section 3 and the regulations issued pursuant thereto by the Secretary of Housing and Urban Development set forth in 24 CFR 135, and all applicable rules and orders of the Department issued thereunder prior to the execution of this Contract. The parties to this Contract certify and agree that they are under no contractual or other disability which would prevent them from complying with these requirements.

3. The Contractor will send to each labor organization or representative of workers with which he has a collective bargaining agreement or other contract or understanding, if any, a notice advising the said labor organization or workers' representative of this commitment under this Section 3 clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment or training.

4. The Contractor will include this Section 3 clause in every subcontract for work in connection with the project and will, at the direction of the applicant for or recipient of Federal financial assistance, take appropriate action pursuant to the subcontract upon a finding that the Subcontractor is in violation of regulations issued by the Secretary of Housing and Urban Development, 24 CFR Part 135. The Contractor will not subcontract with any Subcontractor where it has notice or knowledge that the latter has been found in violation of regulations under 24 CFR Part 135 and will not let any subcontract unless the Subcontractor has first provided it with a preliminary statement of ability to comply with the requirements of these regulations.

5. Compliance with the provisions of Section 3, the regulations set forth in 24 CFR Part 135, and all applicable rules and orders of the Department issued hereunder prior to the execution of the Contract, shall be a condition of the Federal financial assistance provided to the project, binding upon the applicant or recipient for such assistance, its successors and assigns. Failure to fulfill these requirements shall subject the applicant or recipient, its contractors and subcontractors, its successors and assigns to those sanctions specified by the grant or loan agreement or contract through which Federal assistance is provided, and to such sanctions as are specified in 24 CFR Part 135.

D. Section 402 Veterans of the Vietnam Era (if $10,000 or over). Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era.

1. The Contractor will not discriminate against any employee or applicant for employment

because he or she is a disabled veteran or veteran of the Vietnam era in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified disabled veterans and veterans of the Vietnam era without discrimination based on their disability or veteran status in all employment practices such as the following: employment upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

2. The Contractor agrees that all suitable employment openings of the Contractor which exist at the time of the execution of this Contract and those which occur during the performance of this Contract, including those not generated by this Contract and including those occurring at an establishment of the Contractor other than the one wherein the Contract is being performed but excluding those of independently operated corporate affiliates, shall be listed at an appropriate local office of the State employment service system wherein the opening occurs. The Contractor further agrees to provide such reports to such local office regarding employment openings and hires as may be required. State and local government agencies holding Federal contracts of $10,000 or more shall also list all their suitable openings with the appropriate office of the State employment service, but are not required to provide those reports set forth in paragraphs 4 and 5.

3. Listing of employment openings with the employment service system pursuant to this clause shall be made at least concurrently with the use of any other recruitment source or effort and shall involve the normal obligations which attach to the placing of a bona fide job order, including the acceptance of referrals of veterans and non-veterans. The listing of employment openings does not require the hiring of any particular job applicant or from any particular group of job applicants, and nothing herein is intended to relieve the Contractor from any requirements in Executive Orders or regulations regarding nondiscrimination in employment.

4. The reports required by paragraph 2 of this clause shall include, but not be limited to, periodic reports which shall be filed at least quarterly with the appropriate local office or, where the Contractor has more than one hiring location in a State, with the central office of that State employment service. Such reports shall indicate for each hiring location (1) the number of individuals hired during the reporting period, (2) the number of nondisabled veterans of the Vietnam era hired, (3) the number of disabled veterans of the Vietnam era hired, and (4) the total number of disabled veterans hired. The reports should include covered veterans hired for on-the-job training under 38 U.S.C.1787. The Contractor shall submit a report within 30 days after the end of each reporting period wherein any performance is made on this Contract identifying data for each hiring location copies of the reports submitted until the expiration of one year after final payment under the Contract, during which time these reports and related documentation shall be made available, upon request, for examination by any authorized representatives of the contracting officer or of the Secretary of Labor. Documentation would include personnel records respecting job openings, recruitment and placement.

5. Whenever the Contractor becomes contractually bound to the listing provisions of this clause, it shall advise the employment service system in each State where it has establishments of the name and location of each hiring location in the State. As long as

the Contractor is contractually bound to these provisions and has so advised the State system, there is no need to advise the State system of subsequent contracts. The Contractor may advise the State system when it is no longer bound by the contract clause.

6. This clause does not apply to the listing of employment openings which occur and are filled outside of the 50 states, the District of Columbia, Puerto Rico, Guam and the Virgin Islands.

7. The provisions of paragraphs 2, 3, 4 and 5 of this clause do not apply to openings which the Contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement. This exclusion does not apply to a particular opening once an employer decides to consider applicants outside of his own organization or employer-union arrangement for that opening.

8. As used in this clause:

   a. "All suitable employment openings" includes, but is not limited to, openings which occur in the following .job categories: production and nonproduction; plant and office; laborers and mechanics; supervisory and nonsupervisory; technical; and executive, administrative, and professional openings that are compensated on a salary basis of less than $25,000 per year. This term includes full-time employment, temporary employment of more than three days' duration, and part—time employment. It does not include openings which the Contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer—union hiring arrangement nor openings in an educational institution which are restricted to students of that institution. Under the most compelling circumstances an employment opening may not be suitable for listing, including such situations where the needs of the Government cannot reasonably be otherwise supplied, where listing would be contrary to national security, or where the requirement of listing would otherwise not be for the best interest of the Government.

   b. "Appropriate office of the State employment service system" means the local office of the Federal-State national system of public employment offices with assigned responsibility for serving the area where the employment opening is to be filled, including the District of Columbia, Guam, Puerto Rico and the Virgin Islands.

   c. "Openings which the Contractor proposes to fill from within his own organization" means employment openings for which no consideration will be given to persons outside the Contractor's organization (including any affiliates, subsidiaries, and the parent companies) and includes any openings which the Contractor proposed to fill from regularly established "recall" lists.

   d. "Openings which the Contractor proposes to fill pursuant to customary and traditional employer-union hiring arrangements" means employment openings which the Contractor proposes to fill from union halls, which is part of the customary and traditional hiring relationship which exists between the Contractor and representatives of his employees.

9. The Contractor agrees to comply with the rules, regulations and relevant orders of the Secretary of Labor issued pursuant to the Act.

10. In the event of the Contractor's non-compliance with the requirements of this clause,

actions for non-compliance may be taken in accordance with the rules, regulations and relevant orders of the Secretary of Labor issued pursuant to the Act.

11. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, provided by or through the contracting officer. Such notice shall state the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era for employment, and the rights of applicants and employees.

12. The Contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of the Vietnam Era Veterans Readjustment Assistance Act, and is committed to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era.

13. The Contractor will include the provisions of this clause in every subcontract or purchase order of $10,000 or more unless exempted by rules, regulations or orders of the Secretary issued pursuant to the Act, so that such provisions will be binding upon each Subcontractor or vendor. The Contractor will take such action with respect to any subcontractor or purchase order as the Director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for non-compliance.

E. Certification of Compliance with Air and Water Acts (applicable to Federally assisted construction contracts and related subcontracts exceeding $100,000). Compliance with Air and Water Acts. During the performance of this Contract, the Contractor and all Subcontractors shall comply with the requirements of the Clean Air Act, as amended, 42 USC 1857 et seg., the Federal Water Pollution Contract Act, as amended, 33 USC 1251 et seq., and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended. In addition to the foregoing requirements, all nonexempt Contractors and Subcontractors shall furnish to the Owner, the following:

1. A stipulation by the Contractor or Subcontractors that any facility to be utilized in the performance of any nonexempt contract or subcontract is not listed on the List of Violating Facilities issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR 15.20.

2. Agreement by the Contractor to comply with all the requirements of Section 114 of the Clean Air Act, as amended, (42 USC 1857c-8) and Section 308 of the Federal Water Pollution Control Act, as amended, (33 USC 1318) relating to inspection, monitoring, entry, reports and information, as well as all other requirements specified in said Section 114 and Section 308, and all regulations and guidelines issued thereunder.

3. A stipulation that as a condition for the Contract, prompt notice will be given of any notification received from the Director, Office of Federal Activities, or EPA indicating that a facility utilized, or to be utilized for the Contract, is under consideration to be listed on the EPA List of Violating Facilities.

4. Agreement by the Contractor that he will include, or cause to be included, the criteria and requirements in paragraphs A through D of this section in every nonexempt subcontract and requiring that the Contractor will take such actions as the Government may direct as a means of enforcing such provisions.

F. Compliance with Copeland Act Requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

G. Drug-Free Workplace Requirements. The Drug-Free Workplace Act of 1988 (42 U.S.C. 701) requires grantees (including individuals) of federal agencies, as a prior condition of being awarded a grant, to certify that they will provide drug-free workplaces. Each potential recipient must certify that it will comply with drug-free workplace requirements in accordance with the Act and with HUD's rules at 24 CFR part 24, subpart F.

H. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352). Contractors who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient.

IV. DISASTER RECOVERY FUNDED CONTRACTS: The Contractor shall include the following provisions in all Disaster Recover (DR) funded construction contracts. For all DR-funded construction contracts, in the event the provisions contained in this section conflict with provisions contained elsewhere in this document, the provisions contained in this section shall prevail.

A. The Contractor agrees to abide by all applicable Federal regulations in receiving, disbursing and accounting for Community Development Block Grant funds including, but not limited to all applicable sections of 24 CFR 570.

B. ADA Compliance. The Contractor hereby covenants and agrees that, in performing its responsibilities and obligations hereunder, the Contractor, its officers, agents or employees will not, on the grounds of race, color, sex, religion, national origin, disability or age, discriminate or permit discrimination against any person or groups of persons in any manner. The Contractor further agrees to comply with all applicable State and Federal ordinances and regulations, including but not limited to, the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA), the Civil Rights Act of 1964 and any regulations promulgated there under.

C. Section 3 Compliance. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing. The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations. Contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the Contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin. Contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. Contractor will not subcontract with any subcontractor where the Contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135. Contractor will certify that any vacant employment positions,

including training positions, that are filled (1) after Contractor is selected by before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 CFR part 135. Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

D. Section 109 Compliance. No person in the United States will, on the ground of race, color, national origin, religion, or sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity administered of provided under this Agreement, pursuant to Section 109 of title I of the Housing and Community Development Act of 1974 (Title I) (42 U.S.C. 5309).

E. Section 402 Compliance. Contractors and subcontractors shall take affirmative action to employ and advance in employment qualified covered veterans. Disabled veterans, recently separated veterans (veterans within 3 years of their discharge or release from active duty), veterans who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized (referred to as "other protected veterans"), and Armed Forces service medal veterans are covered veterans under VEVRAA, pursuant to the Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended (VEVRAA).

F. Copeland Anti-Kickback Act Compliance. Pursuant to The Copeland "Anti-Kickback" Act, 40 USC §3145 and 18 USC §874, no contractor or subcontractor operating under this agreement shall induce an employee to give up any part of the compensation to which he or she is entitled under his or her contract of employment. Contractors and subcontractors shall submit a weekly statement of the wages paid to each employee performing on covered work during the preceding payroll period.

G. Affirmative Action. During the performance of this contract, the contractors and subcontractors operating under this agreement shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Contractors and subcontractors operating under this agreement shall comply with Affirmative Action laws and regulations to ensure equal employment opportunities, including, but not limited to 41 CFR Part 60-1; 41 CFR Part 60-2; 41 CFR Part 60-250; 41 CFR Part 60-741; compliance with E.O. 11246, "Equal Employment Opportunity," as amended by E.O. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity."

H. Compliance with Goals for Minority and Female Participation. The City of Tuscaloosa has voluntarily adopted a Minority / Disadvantaged Business Enterprise ("MBE/DBE/WBE") Program designed to encourage the participation and development of minority and disadvantaged business enterprises and to promote equal business opportunities to the fullest extent allowed by state and federal law. It is the intent of the City to foster competition among contractors, suppliers, and vendors that will result in better quality and more economical services rendered to the City. Under this policy, the City of Tuscaloosa has established a goal of ten to twenty percent (10-20%) inclusion of minority and disadvantaged business enterprises for all services required to deliver City projects. In no case shall the stated percentage be the determining factor in contract awards. Rather, contractors must demonstrate a good faith effort to attain the desired percentage goal. The Developer is encouraged to adopt corresponding goals to those of the City's Minority / Disadvantaged Business Enterprise ("MBE/DBE/WBE") Program.

I. Compliance with Environmental Laws; including The Clean Air Act and Clean Water Act. Contractors and subcontractors operating under this agreement shall be responsible for ensuring compliance with Federal, State, or local pollution control laws and related requirements, including but not limited to the Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et seq.). If a contracting officer becomes aware of noncompliance with clean air or water standards in facilities used in performing nonexempt contracts, that contracting officer shall notify the agency head, or a designee, who shall promptly notify the EPA Administrator or a designee in writing.

J. Byrd Anti-Lobbying Agreement. Contractors operating under this agreement shall file the required certification under the Byrd Anti-Lobbying Amendment (31 U.S.C. 1352). Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient.

ST: EXC-01
6/14

ALABAMA DEPARTMENT OF REVENUE
SALES AND USE TAX DIVISION
P.O Box 327710 • Montgomery, AL 36132-7710

Application For
Sales and Use Tax Certificate of Exemption

FOR GOVERNMENT ENTITY PROJECT

This Certificate of Exemption will be limited to purchases which qualify for an exemption of sales and use taxes pursuant to Rule No. 810-6-3-.77

PROJECT INFORMATION:

PROJECT NAME	PROJECT OWNER'S FEIN (EXEMPT ENTITY)

STREET ADDRESS OF PROJECT (CITY AND COUNTY INCLUDED)	CITY	ZIP	COUNTY

APPLICANT'S INFORMATION:

RELATION: (CHOOSE ONE)	NAICS CODE
☐ Exempt Entity ☐ General Contractor ☐ Sub-Contractor	
APPLICANT'S LEGAL NAME	FEIN
DBA	CONSUMER'S USE TAX ACCOUNT NUMBER

MAILING ADDRESS

CONTACT PERSON	BUSINESS TELEPHONE NUMBER
	( )

ESTIMATED START DATE	ESTIMATED COMPLETION DATE

REASON EXEMPTION IS CLAIMED

JOB DESCRIPTION

WILL ANY POLLUTION CONTROL EXEMPTION BE APPLICABLE?		ESTIMATED POLLUTION CONTROL COST
☐ Yes ☐ No		$
TOTAL BID AMOUNT	LABOR COST	MATERIAL COST
$	$	$

PROJECT NAME	PROJECT OWNER'S FEIN (EXEMPT ENTITY)

FORM OF OWNERSHIP:

☐ Individual ☐ Partnership ☐ Corporation ☐ Multi member LLC ☐ Single member LLC

If applicant is a corporation, a copy of the certified certificate of incorporation, amended certificate of incorporation, certificate of authority, or articles of incorporation should be attached. If the applicant is a limited liability company or a limited liability partnership, a copy of the certified articles of organization should be attached.

OWNERSHIP INFORMATION:

Corporations – give name, title, home address, and Social Security Number of each officer.

Partnerships – give name, home address, Social Security Number or FEIN of each partner.

Sole Proprietorships – give name, home address, Social Security Number of owner.

LLC – give name, home address, and Social Security Number or FEIN of each member.

LLP – give name, home address, and Social Security Number or FEIN of each partner.

NAME *(PLEASE PRINT)*	SIGNATURE
TITLE	DATE

REVENUE DEPARTMENT USE ONLY

Examiner's Remarks _____

Examiner _____ Date _____

Supervisor's Recommendation _____

Supervisor _____ Date _____

Instructions For Preparation of Form ST: EXC-01
Sales and Use Tax Certificate of Exemption for Government Entity Project

In order to expedite the processing of your application, please include the following documentation when submitting your application:

Exempt Entity:

1. Signed Application
2. Copy of Executed/Signed Contract and/or Letter of Intent

General Contractor:

1. Signed Application
2. Copy of Executed/Signed Contract and/or Letter of Intent
3. List of Sub-Contractors
4. Alabama Board of General Contractor's License
5. State/County Business License (usually obtained through county probate office)
6. Any other municipal business licenses associated with the project

Sub-Contractor:

1. Application
2. Alabama Board of General Contractor's License
3. State/County Business License (usually obtained through county probate office)
4. Any other municipal business licenses associated with the project
5. List of Sub-Contractors (if any)

General contractors and sub-contractors:
Any updates regarding the sub-contractors working on a project, additions and/or deletions, must be submitted to the Department within 30 days of occurrence.

If an extension is needed for a project, please contact the Department of Revenue at the address, numbers, or emails listed below.

THERE IS A FILING REQUIREMENT IF YOUR APPLICATION IS APPROVED. The return will be filed through the Consumer's Use Tax account. If you do not currently have a Consumer's Use Tax account, one will be opened for you. The return should be filed every filing period that the Contractor's Exemption Certificate is active/open and should include the Project No., Exemption No., and the total amount of purchases for the filing period. If there is no product purchased with the exemption certificate, then a zero return must be filed for the period. There is a requirement of one entry for each exemption certificate that is active for each filing period. The information associated with the Contractor's Exemption Certificates is input at the bottom of the return.

The application and applicable documentation may be mailed, faxed, or emailed to the following:

Fax: (334) 353-7867

Emails: amber.hartley@revenue.alabama.gov brenda.wallace@revenue.alabama.gov

Mailing Address: ATTN: Contractor's Exemption
Alabama Dept. of Revenue
Sales & Use Tax Division - Room 4303
PO Box 327710
Montgomery, AL 36132-7710

Exhibit A

THE CITY OF TUSCALOOSA
MINORITY ENTERPRISE/DISADVANTAGED BUSINESS ENTERPRISE
(MBE/DBE/WBE) POLICY FOR PUBLIC WORKS PROJECTS OVER $50,000

General Mission Statement

THE CITY OF TUSCALOOSA (hereinafter, "City") has voluntarily adopted a Minority/Disadvantaged Business Enterprise (MBE/DBE/WBE") Program designed to encourage the participation and development of minority and disadvantaged business enterprises and to promote equal business opportunities in the City to the fullest extent allowed by state and federal law.

It is the intent of the City to foster competition among contractors, suppliers, and vendors that will result in better quality and more economical services rendered to the City. Under this policy, the City of Tuscaloosa has established a goal of ten to twenty percent (10-20%) inclusion of minority and disadvantaged business enterprise (hereinafter sometimes "MBE/DBE/WBE") for all services required to deliver City projects. In no case shall the stated percentage be the determining factor in contract awards. Rather, contractors must demonstrate a good faith effort to attain the desired percentage goal.

Program Goals

It is the goal of this program:

- To ensure non-discrimination in the award and administration of City contracts.
- To help to remove barriers to the participation of DBE/MBE/WBE's in competing for City contracts.
- To ensure a level playing field exists on which DBE/MBE/WBE's can compete fairly for City contracts.

Definition

1. "Minority Business Enterprise" ("MBE") means a business which is an independent and continuing enterprise for profit, performing a commercially useful function and is at least fifty-one percent (51%) owned and controlled by an African American, or Black American.

2. "Women-owned Business Enterprise" ("WBE") means a business which is an independent and continuing enterprise for profit, performing a commercially useful function and is at least fifty-one percent (51%) owned, operated and controlled on a daily basis by one or more female American citizens.

3. "Disadvantaged Business Enterprise" (DBE") means a business which is an independent and continuing enterprise for profit, performing a commercially useful function and is owned by a majority of persons who are United States citizens or permanent resident aliens (as defined by the Immigration and Naturalization Service) of the United States, and who are Asian, Black, Hispanic or Native Americans, according to the following definitions:

"Asian" – means persons having origins in any of the original people of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.

"African American" or "Black American" means persons having origins in any black racial group of Africa.

"Hispanic" means persons of Spanish or Portuguese culture with origins in Mexico, South of Central America, or the Caribbean Islands regardless of race.

"Native American" means persons having origins in any of the original peo9ple of North America, including American Indians, Eskimos and Aleuts.

Equal Business Opportunity

It is the policy of the City to promote full and equal business opportunities for all persons doing business with the City, regardless of race, sex or national origin. It is the ultimate goal of this policy to promote an equitable business climate district. The City will seek to increase minority and women participation for contracts that require formal bids. These efforts will be for contracts above $50,000 as allowed by the Alabama Public Works law. These efforts are designed to help prevent discrimination against minorities and disadvantaged businesses and promote more completion among vendors, suppliers, and contractors of the City of Tuscaloosa.

The City has established a goal of ten to twenty percent (10-20%) of the total construction related expenditures to be provided by minority and disadvantaged business enterprises. While the policy provides for voluntary participation by the City and is dependent upon race-neutral and gender-neutral considerations, contractors are encouraged to comply with the City's policy. The City of Tuscaloosa shall periodically review the policy, including race/gender-neutral remedies, to determine its effectiveness.

Good Faith Effect

The City require contractors to demonstrate a good faith effort to attain the goal of 10-20% participation of MBE/DBE/WBE's in all levels of the Public Works contracting process. Contractors shall document their efforts to obtain minority and disadvantaged business participation in the bid documents. Contractors should note that failure to document a good faith effort to the satisfaction of the City may subject the contractor to bid rejection for non-responsiveness.

The following process shall constitute a good faith effort under the City's policy:

(1) Contractors deciding to bid on a City project shall submit the MBE/DBE/WBE Documentation Statement and Acknowledgement (Form1). Submission of Form 1 confirms the commitment of the contractor to participate in the inclusion effort for the project. Form 1 must be submitted to the City of Tuscaloosa Recovery Operations Department no later than seven (7) days prior to the bid, or at the pre-bid conference, whichever is earlier. The City reserves the right to modify the submittal deadline as-needed.

(2) Contractors shall submit MBE/DBE/WBE Bid Solicitation Notice (Form 2). Form 2 must be submitted to the City of Tuscaloosa Recovery Operations Department no later than seven (7) days prior to the bid, or at the pre-bid conference, whichever is earlier. The City reserves the right to modify the submittal deadline as-needed.

(3) Contractors shall submit a brief plan for achieving the stated MBE/DBE/WBE Participation Goal for his/her trade (Form 3). Form 3 must be submitted in the contractor's sealed bid.

(4) Contractor shall submit a listing of all MBE/DBE/WBE contractors that submitted bids (**Form 4**). Form 4 must be submitted in the contractor's sealed bid. (Note: In the event a MBE/DBE/WBE contractor submits a bid after the general contractor has sealed the bid, contractors should write on the envelope the name(s) and scope of work of the MBE/DBE/WBE contractor who submitted the bid.)

(5) Contractors shall be required to work in cooperation with the City in the implementation of this program. Failure to do so, in the discretion of the City, may result in a rejection of bid due to non-responsiveness.

Following compliance with item (5) above, submission of Form 1, Form 2, Form 3, and Form 4 at the above-prescribed times shall satisfy the good faith effort requirement. Failure to do so may result in rejection of bid due to non-responsiveness.

Additional Administrative Requirements/Procedure

(1) Once a tentative contract award has been made, the successful contractor shall submit a list of all MBE/DBE/WBE firms the contractor proposes to utilize during the execution of the contract (**Form 5**). In addition, the contractor shall include on Form 5 all firms that the major subcontractors propose to utilize.

(2) If the successful contractor will be subcontracting less than the started percentage goal, the Contractor must complete a "MBE/DBE/WBE Unavailability Certification" (**Form 6**). Form 6 is due once a tentative contract award has been made.

(3) Contractors shall obtain the listing of certified MBE/DBE/WBE business by contacting the City of Tuscaloosa Recovery Operations Department to assist in soliciting MBE/DBW/WBE participation for the project.

(4) Contractors shall not be required to use a MBE/DBE/WBE subcontractor who cannot display reasonable technical and financially qualifications to perform the work in question.

(5) In addition to the above requirements, contractors should note that the City reserves the right to periodically audit payroll records to ensure compliance with the program. The City employs the services of a Compliance Director.

(6) Upon completion of the project and prior to release of retainage or final payment, the contractor shall submit a Project Closeout Report **(Form 7)** that includes final accounting of all MBE/DBE/WBE firms utilized on the project.

(7) On a monthly basis, contractors shall submit updated MBE/DBE/WBE reports (Monthly Report Form) to identify any changes in MBE/DBE/WBE firm utilization **(Form 8)**. Contractors shall submit Form 8 directly to the City of Tuscaloosa Recovery Operations Department.

Race/Gender – Neutral Remedies

The City recognizes that race/gender – neutral remedies may be effective tools used to increase MBE/DBE/WBE participation. Therefore, the City will continue to explore these remedies. The remedies will include, but will not be limited to, the following:

1. Technical assistance techniques to identify and increase the participation of MBE/DBE/WBE's in the City's contracting, subcontracting and purchasing opportunities.
2. Continuation of the certification process.

The City will periodically review the success of these measures in order to determine the extent to which the measures provide equitable access to the City's contracting, subcontracting and purchasing opportunities.

The City has determined that this policy complies with all applicable local, state and national laws concerning the contracting and purchasing process. The City shall not sacrifice product quality for lower pricing, but shall make all awards in accordance with applicable law. It shall be the primary responsibility of the City to insure that this policy is followed, and that all actions regarding the contracting and purchasing process comply with all applicable statues as well as the defined goals relative to MBE/DBE/WBE participation on all construction projects.

Contact Information:

City of Tuscaloosa Recovery Department
Robin Edgeworth, Director
(205) 248-5725
redgeworth@tuscaloosa.com

Form 1 (one page)
Documentation Statement and Acknowledgement

(Due no later than seven (7) days prior to the bid, or at the pre-bid conference, whichever is earlier)

PROJECT NAME: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1A & B

The City of Tuscaloosa has adopted a program to encourage the participation of Minority Business Enterprises/Disadvantaged Business Enterprises (MBE/DBE/WBE) on its public works construction projects. The signed statement serves as a commitment by the undersigned company to comply with this program as outlined by the City, relative to the involvement of MBE/DBE/WBE firm in City guidelines.

The undersigned Company will adhere to City program guidelines set forth to utilize MBE/DBE/WBE businesses in all construction projects, and all program forms (1-8) have been reviewed and understood.

Lee Williams	April 16, 2015
Company Representative (Signature)	Date
LEE Williams	PROJECT MANAGER
Company Representative (Printed)	Title
RYAN SHIRLEY, INC.	205-330-7803
Company Name	Telephone Number
NORTHPORT, AL 35476	205-330-9402
City, State, Zip	Fax Number

Form 2 (6 pages)
Bid Solicitation Notice

(Due no later than seven (7) days prior to the bid, or at the pre-bid Conference, whichever is earlier)

BID DATA

1. GENERAL CONTRACTOR: RYAN SHIRLEY, INC.

   ADDRESS: 6425 5TH STREET

   NORTHPORT, AL 35476

   CONTACT (S): RYAN SHIRLEY OR LEE WILLIAMS

   PHONE: 205-330-1803

   FAX: 205-330-9402

   E-MAIL: lwilliams@ryanshirleyinc.com

2. OWNER: CITY OF TUSCALOOSA

3. NAME OF PROJECT: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1A B

4. SCHEDULE PRE-BID MEETING

   DATE/TIME: 4/16/15 @ 10:00 AM
   LOCATION: CITY HALL

5. DATE/TIME FOR RECEIPT OF BIDS: APRIL 27, 2015 @ 2:00 pm

6. SCHEDULE BID OPENING

   DATE/TIME: APRIL 27, 2015
   LOCATION: CITY HALL

7. ESTIMATED JOB START DATE: MAY 2015

8. ESTIMATED COMPLETION DATE: NOVEMBER 2015

PROJECT: ALBERTA REVITALIZATION INFRASTRUCTURE

LOCATION: TUSCALOOSA

BID DATE: APRIL 27, 2015

GENERAL CONTRACTOR CONTACT:

NAME RYAN SHIRLEY

ADDRESS: 6425 5TH ST. NORTHPORT, AL 35476

TELEPHONE: (205) 330-1803

FAX: (205) 330-9402

EMAIL: ( ) lwilliamsryan shirleyinc.com

DEADLINE FOR PROPOSALS

DATE/TIME

* Estimated Contract Opportunity Value:
(1) 0-25,000 (2) 25,000-50,000 (3) 50,000-100,000 (4) 100,000 - 500,000 (5) over 500,000

DIVISION 02 – EXISTING CONDITIONS
(1) (2) (3) (4) (5) *

[1] 02 21 SURVEYS
[ ] 02 32 GEOTECHNICAL INVESTIGATIONS
[2] 02 41 DEMOLITION
[ ] 02 42 REMOVAL and SALVAGE of CONSTRUCTION MATERIALS
[ ] 02 43 STRUCTURE MOVING
[ ] 02 55 SITE CONTAINMENT
[ ] 02 65 UNDERGROUND STORAGE TANK REMOVAL
[ ] 02 81 TRANSPORTATION and DISPOSAL of HAZARDOUS MATERIALS
[ ] 02 82 ASBESTOS REMEDIATION
[ ] 02 83 LEAD REMEDIATION
[ ] 02 85 MOLD REMEDIATION
[ ] 02 91 CHEMICAL SAMPLING, TESTING and ANALYSIS
[ ] 02 __ _____
(Please fill-in other opportunity)

DIVISION 3 - CONCRETE (1) (2) (3) (4) (5)
[1] 03 01 MAINTENANCE OF CONCRETE
[2] 03 11 CONCRETE FORMING
[ ] 03 15 CONCRETE ACCESSORIES
[2] 03 21 REINFORCING STEEL
[ ] 03 22 WELDED WIRE FABRIC REINFORCING
[2] 03 30 CAST-IN-PLACE CONCRETE
[2] 03 31 STRUCTURAL CONCRETE
[2] 03 35 CONCRETE FINISHING
[ ] 03 37 SPECIALTY PLACED CONCRETE
[ ] 03 39 CONCRETE CURING
[ ] 03 41 PRECAST STRUCTURAL CONCRETE
[ ] 03 45 PRECAST ARCHITECTURAL CONCRETE
[ ] 03 47 SITE-CAST CONCRETE
[ ] 03 62 NON-SHRINK GROUTING
[ ] 03 63 EPOXY GROUTING
[ ] 03 81 CONCRETE CUTTING
[ ] 03 82 CONCRETE BORING
[ ] 03 __ _____
(Please fill-in for other opportunity)

DIVISION 4 - MASONRY (1) (2) (3) (4) (5)
[2] 04 21 CLAY UNIT MASONRY
[ ] 04 22 CONCRETE UNIT MASONRY
[ ] 04 28 UNIT MASONRY PANELS
[ ] 04 30 MULTIPLE-WYTHE MASONRY
[ ] 04 43 STONE MASONRY
[ ] 04 57 MASONRY FIREPLACES
[ ] 04 71 MANUFACTURED BRICK MASONRY
[ ] 04 73 MANUFACTURED STONE MASONRY
[ ] 04 __ _____
(Please fill-in for other opportunity)

DIVISION 5 - METALS (1) (2) (3) (4) (5)
[ ] 05 12 STRUCTURAL STEEL FRAMING
[ ] 05 14 STRUCTURAL ALUMINUM FRAMING
[ ] 05 15 WIRE ROPE ASSEMBLIES
[ ] 05 21 STEEL JOIST FRAMING
[ ] 05 31 STEEL DECKING
[ ] 05 35 RACEWAY DECKING ASSEMBLIES
[ ] 05 41 STRUCTURAL METAL STUD FRAMING
[1] 05 42 COLD-FORMED METAL JOIST FRAMING
[ ] 05 44 COLD-FORMED METAL TRUSSES
[ ] 05 51 METAL STAIRS
[ ] 05 52 METAL RAILINGS
[ ] 05 53 METAL GRATINGS
[ ] 05 55 METAL STAIR TREADS & NOSING
[ ] 05 56 METAL CASTINGS
[ ] 05 58 FORMED METAL FABRICATIONS
[ ] 05 71 DECORATIVE METAL STAIRS
[ ] 05 73 DECORATIVE METAL RAILINGS
[ ] 05 75 DECORATIVE FORMED METAL
[ ] 05 __ _____
(Please fill-in for other opportunity)

DIVISION 6 – WOODS, PLASTICS & COMPOSITES
(1) (2) (3) (4) (5)

[1] 06 11 WOOD FRAMING

[ ] 06 12 STRUCTURAL PANELS
[ ] 06 15 WOOD DECKING
[ ] 06 16 SHEATING
[ ] 06 17 SHOP FABRICATED STRUCTURAL WOOD
[ ] 06 22 MILLWORK
[ ] 06 25 PREFINISHED PANEL
[ ] 06 26 PANELING
[ ] 06 43 WOOD STAIRS & RAILINGS
[ ] 06 44 ORNAMENTAL WOODWORK
[ ] 06 48 WOOD FRAMES
[ ] 06 __ _____
(Please fill-in for other opportunity)

DIVISION 7 – THERMAL & MOISTURE PROTECTION {1} {2} {3} {4} {5}
[ ] 07 11 DAMPPROOFING
[ ] 07 12 BUILT-UP BITUMINOUS WATERPROOFING
[ ] 07 13 SHEET WATERPROOFING
[ ] 07 16 CEMENTIOUS & REACTIVE WATERPROOFING
[ ] 07 19 WATER REPELLANTS
[ ] 07 21 THERMAL INSULATION
[ ] 07 22 ROOF & DECK INSULATION
[ ] 07 24 EXTERIOR INSULATION & FINISH SYSTEMS
[ ] 07 25 WEATHER BARRIERS
[ ] 07 26 VAPOR RETARDERS
[ ] 07 31 SHINGLES & SHAKES
[ ] 07 32 ROOF TILES
[ ] 07 33 NATURAL ROOF COVERINGS
[ ] 07 41 ROOF PANELS
[ ] 07 42 WALL PANELS
[ ] 07 46 SIDING
[ ] 07 51 BUILT-UP BITUMINOUS ROOFING
[ ] 07 52 MODIFIED BITUMINOUS MEMBRANE ROOFING
[ ] 07 53 ELASTOMETRIC MEMBRANE ROOFING
[ ] 07 54 THERMOPLASTIC MEMBRANE ROOFING
[ ] 07 56 FLUID APPLIED ROOFING
[ ] 07 58 ROLL ROOFING
[ ] 07 61 SHEET METAL ROOFING
[ ] 07 65 FLEXIBLE FLASHING

[ ] 07 71 ROOF SPECIALTIES
[ ] 07 72 ROOF ACCESSORIES
[ ] 07 81 APPLIED FIREPROOFING
[ ] 07 84 FIRESTOPPING
[ ] 07 91 PREFORMED JOINT SEALS
[ ] 07 92 JOINT SEALANTS
[ ] 07 95 EXPANSION CONTROL
[ ] 07 __ _____
(Please fill-in for other opportunity)

DIVISION 8 - OPENINGS {1} {2} {3} {4} {5}
[ ] 08 11 METAL DOORS & FRAMES
[ ] 08 12 METAL FRAMES
[ ] 08 13 METAL DOORS
[ ] 08 14 WOOD DOORS
[ ] 08 16 COMPOSITE DOORS
[ ] 08 17 INTEGRATED DOOR OPENING ASSEMBLIES
[ ] 08 31 ACCESS DOORS & PANELS
[ ] 08 32 SLIDING GLASS DOORS
[ ] 08 33 COILING DOORS & GRILLES
[ ] 08 34 SPECIAL FUNCTION DOORS
[ ] 08 36 PANEL DOORS
[ ] 08 38 TRAFFIC DOORS
[ ] 08 41 ENTRANCES & STOREFRONTS
[ ] 08 42 ENTRANCES
[ ] 08 43 STOREFRONTS
[ ] 08 44 CURTAIN WALL & GLAZED ASSEMBLIES
[ ] 08 51 METAL WINDOWS
[ ] 08 52 WOOD WINDOWS
[ ] 08 53 PLASTIC WINDOWS
[ ] 08 54 COMPOSITE WINDOWS
[ ] 08 56 SPECIAL FUNCTION WINDOWS
[ ] 08 62 UNIT SKYLIGHTS
[ ] 08 63 METAL-FRAMED SKYLIGHTS
[ ] 08 71 DOOR HARDWARE
[ ] 08 74 ACCESS CONTROL HARDWARE
[ ] 08 75 WINDOW HARDWARE
[ ] 08 79 HARDWARE ACCESSORIES
[ ] 08 81 GLASS GLAZING
[ ] 08 83 MIRRORS
[ ] 08 84 PLASTIC GLAZING
[ ] 08 88 SPECIAL FUNCTION GLAZING
[ ] 08 91 LOUVERS
[ ] 08 95 VENTS
[ ] 08 __ _____
(Please fill-in for other opportunity)

DIVISION 9 - FINISHES {1} {2} {3} {4} {5}
[ ] 09 21 PLASTER & GYPSUM ASSEMBLIES
[ ] 09 22 SUPPORTS FOR PLASTER & GYPSUM
[ ] 09 23 GYPSUM PLASTERING
[ ] 09 24 CEMENT PLASTERING
[ ] 09 26 VENEER PLASTERING
[ ] 09 28 BACKING S & UNDERLAYMENTS
[ ] 09 29 GYPSUM
[ ] 09 30 TILING
[ ] 09 51 ACOUSTICAL CEILINGS
[ ] 09 54 SPECIALTY CEILINGS
[ ] 09 62 SPECIALTY FLOORING
[ ] 09 63 MASONRY FLOORING
[ ] 09 64 WOOD FLOORING

[ ] 09 65 RESILIENT FLOORING
[ ] 09 66 TERRAZZO FLOORING
[ ] 09 68 CARPETING
[ ] 09 72 WALL COVERINGS
[ ] 09 77 SPECIAL WALL SURFACING
[ ] 09 91 PAINTING
[ ] 09 93 STAINING & TRANSPARENT FINISHING
[ ] 09 96 HIGH PERFORMANCE COATINGS
[ ] 09 97 SPECIAL COATINGS
[ ] 09 __ _____
(Please fill-in for other opportunity)

DIVISION 10 - SPECIALTIES {1} {2} {3} {4} {5}
[ ] 10 11 VISUAL DISPLAY UNITS
[ ] 10 14 SIGNAGE
[ ] 10 22 PARTITIONS
[ ] 10 26 WALL & DOOR PROTECTION
[ ] 10 28 TOILET, BATH & LAUNDRY ACCESSORIES
[ ] 10 44 FIRE PROTECTION SPECIALTIES
[ ] 10 51 LOCKERS
[ ] 10 71 EXTERIOR PROTECTION
[ ] 10 74 MANUFACTURED EXTERIOR SPECIALTIES
[ ] 10 75 FLAGPOLES
[ ] 10 81 PEST CONTROL DEVICES
[ ] 10 88 SCALES
[ ] 10 __ _____
(Please fill-in for other opportunity)

DIVISION 11 - EQUIPMENT {1} {2} {3} {4} {5}
[ ] 11 11 VEHICLE SERVICE EQUIPMENT
[ ] 11 12 PARKING CONTROL EQUIPMENT
[ ] 11 13 LOADING DOCK EQUIPMENT
[ ] 11 14 PEDESTRIAN CONTROL EQUIPMENT
[ ] 11 24 MAINTENANCE EQUIPMENT
[ ] 11 31 RESIDENTIAL APPLIANCES
[ ] 11 33 RETRACTABLE STAIRS
[ ] 11 41 FOODSERVICE STORAGE EQUIPMENT
[ ] 11 42 FOOD PREPARATION EQUIPMENT
[ ] 11 43 FOOD DELIVERY CARTS AND CONVEYORS
[ ] 11 44 FOOD COOKING EQUIPMENT
[ ] 11 46 FOOD DISPENSING EQUIPMENT
[ ] 11 47 ICE MACHINES
[ ] 11 48 CLEANING & DISPOSAL EQUIPMENT
[ ] 11 52 AUDIO-VISUAL EQUIPMENT
[ ] 11 53 LABORATORY EQUIPMENT
[ ] 11 66 ATHLETIC EQUIPMENT
[ ] 11 67 RECREATIONAL EQUIPMENT
[ ] 11 82 SOLID WASTE HANDLING
[ ] 11 __ _____
(Please fill-in for other opportunity)

DIVISION 12 - FURNISHINGS {1} {2} {3} {4} {5}
[ ] 12 21 WINDOW BLINDS
[ ] 12 22 CURTAINS & DRAPES
[ ] 12 23 INTERIOR SHUTTERS
[ ] 12 24 WINDOW SHADES
[ ] 12 32 MANUFACTURED CASEWORK
[ ] 12 35 SPECIALTY CASEWORK
[ ] 12 36 COUNTERTOPS
[ ] 12 46 FURNISHING ACCESSORIES
[ ] 12 48 RUGS & MATS
[ ] 12 51 OFFICE FURNITURE
[ ] 12 52 SEATING
[ ] 12 54 HOSPITALITY FURNITURE
[ ] 12 56 INSTITUTIONAL FURNITURE
[ ] 12 61 FIXED AUDIENCE SEATING
[ ] 12 63 STADIUM & ARENA SEATING
[ ] 12 67 PEWS & BENCHES
[ ] 12 92 INTERIOR PLANTERS & ARTIFICAL PLANTS
[ ] 12 93 SITE FURNISHINGS
[ ] 12 __ _____
(Please fill-in for other opportunity)

DIVISION 13 - SPECIAL CONSTRUCTION {1} {2} {3} {4} {5}
[ ] 13 11 SWIMMING POOLS
[ ] 13 17 TUBS & POOLS
[ ] 13 18 ICE RINKS
[ ] 13 21 CONTROLLED ENVIRONMENT ROOMS
[ ] 13 24 SPECIAL ACTIVITY ROOMS
[ ] 13 28 ATHLETIC & RECREATIONAL SPECIAL CONSTRUCTION
[ ] 13 31 FABRIC STRUCTURES
[ ] 13 34 FABRICATED ENGINEERED STRUCTURES
[ ] 13 36 TOWERS
[ ] 13 42 BUILDING MODULES
[ ] 13 48 SOUND, VIBRATION, & SEISMIC CONTROL
[ ] 13 49 RADIATION PROTECTION
[ ] 13 __ _____
(Please fill-in for other opportunity)

DIVISION 14 - CONVEYING SYSTEMS {1} {2} {3} {4} {5}
[ ] 14 11 MANUAL DUMBWAITERS
[ ] 14 12 ELECTRIC DUMBWAITERS
[ ] 14 21 ELECTRIC TRACTION ELEVATORS
[ ] 14 24 HYDRAULIC ELEVATORS
[ ] 14 27 CUSTOM ELEVATOR CABS & DOORS
[ ] 14 28 ELEVATOR EQUIPMENT & CONTROLS
[ ] 14 31 ESCALATORS

[ ] 14 32 MOVING WALKS
[ ] 14 42 WHEELCHAIR LIFTS
[ ] 14 51 CORRESPNDENCE & PARCEL LIFTS
[ ] 14 91 FACILITY CHUTES
[ ] 14 92 PNEUMATIC TUBE SYSYTEMS
[ ] 14 __ _____
(Please fill-in for other opportunity)

DIVISION 21 –FIRE SUPPRESSION {1} {2} {3} {4} {5}
[ ] 21 11 FIRE-SUPPRESSION WATER SERVICE PIPING &METHODS
[ ] 21 12 FIRE SUPPRESSION STANDPIPES
[ ] 21 13 FIRE SUPPRESSION SPRINKLER SYSTEMS
[ ] 21 21 CARBON-DIOXIDE FIRE EXTINGUISHING SYSTEMS
[ ] 21 22 CLEAN AGENT FIRE EXTINGUISHING SYSTEMS
[ ] 21 31 CENTIFUGAL FIRE PUMPS
[ ] 21 __ _____
(Please fill-in for other opportunity)

DIVISON 22-PLUMBING {1} {2} {3} {4} {5}
[ ] 22 07 PLUMBING INSULATION
[ ] 22 11 FACILITY WATER DISTRIBUTION
[ ] 22 13 FACILITY SANITARY SEWERAGE
[ ] 22 14 FACILITY STORM DRAINAGE
[ ] 22 41 COMMERICAL PLUMBING FIXTURE

[ ] 22 42 COMMERICAL PLUMBING FIXTURES
[ ] 22 45 EMERGENCY PLUMBING FIXTURES
[ ] 22 47 DRINKING FOUNTAINS & WATER COOLERS
[ ] 22 51 SWIMMING POOL PLUMBING SYSTEMS
[ ] 22 66 CHEMICAL-WASTE SYSTEMS FOR LAB & HEALTHCARE FACILITIES
[ ] 22 __ _____
(Please fill-in for other opportunity)

DIVISON 23-HEATING VENTILATION AIR CONDITIONING {1} {2} {3} {4} {5}

[ ] 23 07 HVAC INSULATION
[ ] 23 09 INSTRUMENTATION & CONTROL FOR HVAC
[ ] 23 13 FACILITY FUEL-STORAGE TANKS
[ ] 23 21 HYDRONIC PIPING & PUMPS
[ ] 23 22 STEAM & CONDENSATE PIPING & PUMPS
[ ] 23 31 HVAC DUCTS & CASINGS
[ ] 23 33 AIR DUCT ACCESSORIES
[ ] 23 34 HVAC FANS
[ ] 23 37 AIR OUTLETS & INLETS
[ ] 23 38 VENTILATION HOODS
[ ] 23 41 PARTICULATE AIR FILTRATION
[ ] 23 52 HEATING BOILERS
[ ] 23 54 FURNACES
[ ] 23 56 SOLAR ENERGY HEATING EQUIP.
[ ] 23 57 HEAT EXCHANGES FOR HVAC
[ ] 23 62 PACKAGED COMPRESSOR & CONDENSOR UNITS
[ ] 23 63 REFRIGERANT CONDENSORS
[ ] 23 64 PACKAGED WATER CHILLERS
[ ] 23 65 COOLING TOWERS
[ ] 23 73 INDOOR CENTRAL-STATION AIR-HANDLING UNITS
[ ] 23 74 PACKAGED OUTDOOR HVAC EQUIP

[ ] 23 82 CONVECTION HEATING & COOLING UNITS
[ ] 23 84 HUMIDITY CONTROL EQUIPMENT
[ ] 23 __ _____
(Please fill-in for other opportunity)

DIVISON 26-ELECTRICAL {1} {2} {3} {4} {5}
[ ] 26 09 INSTRUMENTATION & CONTROL FOR ELECTRICAL SYSTEMS
[ ] 26 12 MEDIUM VOLTAGE TRANSFORMERS
[ ] 26 22 LOW VOLTAGE TRANSFORMERS
[ ] 26 24 SWITCHS & PANELS
[ ] 26 25 ENCLOSED BUS ASSEMBLIES
[ ] 26 27 LOW VOLTAGE DISTRIBUTION EQUIPMENT
[ ] 26 28 LOW VOLTAGE CIRCUIT PROTECTIVE DEVICES
[ ] 26 29 LOW VOLTAGE CONTROLLERS
[ ] 26 32 PACKAGED GENERATOR ASSEMBLIES
[ ] 26 35 POWER FILTERS & CONDITIONERS
[ ] 26 42 CATHODIC PROTECTION
[ ] 26 51 INTERIOR LIGHTING
[ ] 26 52 EMERGENCY LIGHTING
[ ] 26 53 EXIT SIGNS
[ ] 26 54 CLASSIFIED LOCATION LIGHTING
[ ] 26 55 SPECIAL PURPOSE LIGHTING
[ ] 26 56 EXTERIOR LIGHTING
[ ] 26 61 LIGHTING SYSTEMS & ACCESSORIES
[ ] 26 71 ELECTRICAL MACHINES
[ ] 26 __ _____
(Please fill-in for other opportunity)

COMMUNICATIONS- 27 {1} {2} {3} {4} {5}
[2] 27 13 COMMUNICATIONS BACKBONE CABLING
[ ] 27 41 AUDIO-VIDEO SYSTEMS
[ ] 27 51 DISTRIBUTED AUDIO VIDEO
[ ] 27 52 HEALTHCARE COMMUNICATIONS & MONITORING SYSTEMS
[ ] 27 53 DISTRIBUTED SYSTEMS

[ ] 27 __ _____
(Please fill-in for other opportunity)

ELECTRONIC SAFETY & SECURITY- 28 {1} {2} {3} {4} {5}
[2] 28 13 COMMUNICATIONS BACKBONE CABLING
[ ] 28 16 INTRUSION DETECTION
[ ] 28 23 VIDEO SURVEILLANCE
[1] 28 31 FIRE DETECTION
[ ] 28 33 FUEL-GAS DETECTION
[ ] 28 39 MASS NOTIFICATION SYSTEMS
[ ] 28 __ _____
(Please fill-in for other opportunity)

EARTHWORK-31 {1} {2} {3} {4} {5}
[2] 31 06 SCHEDULES FOR EARTHWORK
[ ] 31 11 CLEARING & GRUBBING
[ ] 31 13 SELECTIVE TREE & SHRUB REMOVAL & TRIMMING
[2] 31 14 EARTH STRIPPING & STOCKPILING
[2] 31 22 GRADING
[2] 31 23 EXCAVATION & FILL
[ ] 31 25 ERSION & SEDIMENTATION
[ ] 31 31 SOIL TREATMENT
[ ] 31 32 SOIL STABILIZATION
[ ] 31 33 ROCK STABILIZATION
[ ] 31 36 GABIONS
[ ] 31 37 RIPRAP
[ ] 31 41 SHORING
[ ] 31 43 CONCRETE RAISING
[ ] 31 45 VIBROFLORATION & DENSIFICATION
[ ] 31 46 NEEDLE BEAMS
[ ] 31 48 UNDERPINNING
[ ] 31 52 COFFERDAMS
[ ] 31 56 SHURRY WALLS
[ ] 31 62 DRIVEN PILES
[ ] 31 63 BORED PILES
[ ] 31 __ _____
(Please fill-in for other opportunity)

EXTERIOR IMPROVEMENTS- 32 {1} {2} {3} {4} {5}
[3] 32 11 BASE COURSES
[3] 32 12 FLEXIBLE PAVING
[ ] 32 13 RIGID PAVING
[3] 32 16 CURBS, GUTTERS SIDEWALKS & DRIVEWAYS
[ ] 32 17 PAVING SPECIALTIES
[ ] 32 18 ATHLETIC & RECREATIONAL SURFACING
[ ] 32 31 FENCES & GATES
[ ] 32 32 RETAINING WALLS
[ ] 32 34 FABRICATED BRIDGES
[ ] 32 35 SCREENING DEVICES
[2] 32 84 PLANTING IRRIGATION
[2] 32 91 PLANTING PREPARATION
[2] 32 92 TURF & GRASSES
[3] 32 93 PLANTS
[ ] 32 94 PLANTING ACCESSORIES
[ ] 32 96 TRANSPLANTING
[ ] 32 __ _____
(Please fill-in for other opportunity)

UTILITIES-33 {1} {2} {3} {4} {5}
[3] 33 11 WATER UTILITY DISTRIBUTION PIPING
[3] 33 12 WATER UTILITY DISTRIBUTION EQUIPMENT
[ ] 33 16 WATER UTILITY STORAGE TANKS
[ ] 33 21 WATER SUPPLY WELLS
[3] 33 31 SANITARY UTILITY SEWERAGE PIPING
[ ] 33 36 UTILITY SEPTIC TANKS
[2] 33 41 STORM UTILITY DRAINAGE PIPING
[ ] 33 42 CULVERTS
[ ] 33 44 STORM UTILITY WATER DRAINS
[ ] 33 46 SUBDRAINAGE
[ ] 33 49 STORM DRAINAGE STRUCTURES
[ ] 33 51 NATURAL GAS DISTRIBUTION
[ ] 33 52 LIQUID FUEL DISTRIBUTION
[ ] 33 71 ELECTRICAL UTILITY TRANSMISSION & DISTRIBUTION
[ ] 33 81 COMMUNICATIONS & STRUCTURES
[ ] 33 __ _____
(Please fill-in for other opportunity)

TRANSPORATION-34 {1} {2} {3} {4} {5}
[ ] 34 11 RAIL TRACKS
[ ] 34 41 ROADWAY SIGNALING AND CONTROL EQUIPMENT
[ ] 34 71 ROADWAY CONSTRUCTION
[ ] 34 72 RAILWAY CONSTRUCTION
[ ] 34 __ _____
(Please fill-in for other opportunity)

MATERIAL PROCESSING & HANDLING EQUIPMENT-41 {1} {2} {3} {4} {5}
[ ] 41 21 CONVEYORS
[ ] 41 22 CRANES & HOISTS
[ ] 41 __ _____
(Please fill-in for other opportunity)

POLLUTION CONTROL EQUIP-44 {1} {2} {3} {4} {5}
[ ] 44 11 PARTICULATE CONTROL EQUIPMENT
[ ] 44 __ _____
(Please fill-in for other opportunity)

WATER & WASTEWATER EQUIPMENT-46 {1} {2} {3} {4} {5}
[ ] 46 07 PACKAGED WATER & WASTEWATER TREATMENT EQUIPMENT
[ ] 46 __ _____
(Please fill-in for other opportunity)

FORM 3 (1page)

PARTICIPATION GOAL

(Must be submitted in the contractor's sealed bid)

General Contractor: RYAN SHIRLEY, INC.

Contact: RYAN SHIRLEY

Name of Project: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B

Date Submitted: APRIL 28, 2015

The project has a goal of ten to twenty percent (10-20%) MBE/DBE/WBE participation. Provide a brief summary of how this goal will be achieved. Failure to submit this form may result in a bid being rejected for non-responsiveness.

My goal for this project is 10 %.

I plan on achieving this goal by: CONTACTING THE CITY OF TUSCALOOSA RECOVERY DEPARTMENT TO INFORM THEM RYAN SHIRLEY, INC IS SEEKING PROPOSALS FROM QUALIFIED MBE/DBE/WBE FIRMS. SEE PREVIOUS PAGES WHERE EMAIL SOLICITATION WAS SENT ON APRIL 17, 2015.

Lee Williams

From: Lee Williams
Sent: Friday, April 17, 2015 8:16 AM
To: 'Robin Edgeworth'
Subject: Alberta Revitalization Infrastructure Project Bid Solicitation
Attachments: Alberta Revitalization Infrastructure Project Bid Solicitation.pdf

Robin,

Attached is the bid solicitation for the upcoming Alberta Revitalization Infrastructure Project Phase 1B for the City of Tuscaloosa. Ryan Shirley, Inc. is actively seeking proposals from qualified MBE/WBE/DBE firms. The project bids Monday April 27, 2015 at 2:00 PM. I also included a bid schedule that further outlines the project scope requirements. Should anyone interested need to review plans or specs my contact number is listed below and I have a copy of the project bid documents at our office. Thanks in advance for your help.

Regards,

Lee Williams
Ryan Shirley, Inc.
205.330.1803 office
205.330.9402 fax

RYAN SHIRLEY CO., INC.
PO Box 657 Northport, AL 35476 (205) 330-1803 Fax 330-9402

April 17, 2015

TO: City of Tuscaloosa Recovery Department

ATTN: Robin Edgeworth, Director of Recovery Operations

CONTACT: redgeworth@tuscaloosa.com

RE: Alberta Revitalization Infrastructure Project Phase 1B

Ryan Shirley, Inc. is actively seeking proposals from qualified MBE/WBE/DBE firms for the above referenced project, City of Tuscaloosa Project Number A12-1324. The scope of work includes, but not limited to demolition, erosion control, site concrete, storm drainage, sanitary sewer, water distribution, roadway paving, landscaping and site lighting. The project bid date is April 27, 2015 at 2:00 p.m. Attached is the scope of work outlining the project requirements.

All proposals shall be submitted to Ryan Shirley, Inc. via fax, attention Lee Williams at (205) 330-9402 on or before the requested bid date.

Sincerely,

Ryan Shirley, Inc.

Lee Williams

Lee Williams

Project Manager

City of Tuscaloosa
Alberta Revitalization Infrastructure Project

Phase 1B
Bid Schedule
March 30, 2015

Item No.	Quantity	Unit	Description	Unit Cost	Total Cost
PROJECT BASE BID COST					
General, Demolition, Clearing, Grubbing, and Earthwork					
1	1	l.s.	Payment and Performance Bonds		
2	1	l.s.	Mobilization and Demobilization		
3	1	l.s.	Demolition, Clearing, and Grubbing (Approximately 5 acres)		
4	980	l.f.	Removal/Stone Backfill of Existing Pipe (4" & larger, all material)		
5	13	each	Remove Existing Sanitary Manhole/Storm Structure & Backfill		
6	15	c.y.	Slurry Fill of Abandoned Pipes		
7	4207	s.y.	Remove Existing Pavements (Concrete and Asphalt)		
8	2	each	Remove Existing Fire Hydrant		
9	1	l.s.	Earthwork		
10	1	l.s.	Topsoil		
11	1500	c.y.i.p.	Removal/Disposal/Replacement of Unsuitable Material		
Base, Pave and Curb & Gutter Improvements					
12	200	s.y.	Milling/Planing Existing Pavement (Thickness Varies)		
13	8995	s.y.	Roadbed Processing		
14	247	s.y.	Crushed Aggregate Stone Base, 825B (4" Thickness) (Concrete Pavement & Residential Drives)		
15	7329	s.y.	Crushed Aggregate Stone Base, 825B (6" Thickness) (Asphalt Pavement & Speed Tables)		
16	7101	s.y.	Bituminous Treatment A (ALDOT 401)		
17	602	gal	Tack Coat (ALDOT 405A)		
18	6023	s.y.	Bituminous Concrete Wearing Surface Layer, 1/2" Max Aggregate Mix (ALDOT 424A) (1.5" Compacted Thickness)		
19	6023	s.y.	Bituminous Concrete Lower Binder Layer, 1" Max Aggregate Mix (ALDOT 424B) (3" Compacted Thickness)		
20	1500	s.y.	Temporary Asphalt Patching (2" Asphalt Thickness)		
21	217	s.y.	Concrete Driveway - Residential (6" Thick)		
22	45	s.y.	Concrete Pavement (Drives at APCO Substation)		
23	202	s.y.	Concrete Speed Table		
24	1057	s.y.	Concrete Sidewalk		
25	2282	s.y.	Concrete City Walk		
26	727	s.f.	Truncated Dome Pavers		
27	24	each	Handicap Ramps		
28	1406	s.y.	Permeable Concrete Pavers (Includes all Stone Base Materials, Concrete Band, & Underdrain)		
29	846	l.f.	Combination Curb and Gutter		
30	2025	l.f.	6" Standup Curb		
31	2594	l.f.	8" Standup Curb (Includes Median Curb Cuts)		
32	114	l.f.	6' Valley Gutter		
Storm Sewer System Improvements					
33	360	l.f.	15" R.C. Pipe, Class 3		
34	275	l.f.	18" R.C. Pipe, Class 3		
35	340	l.f.	24" R.C. Pipe, Class 3		
36	160	l.f.	30" R.C. Pipe, Class 3		
37	57	l.f.	22" x 13 1/2" R.C. Arch Pipe, Class 3		
38	615	l.f.	28 1/2" x 18" R.C. Arch Pipe, Class 3		
39	79	l.f.	36 1/4" x 22 1/2" R.C. Arch Pipe, Class 3		
40	12	each	Type "S" Inlet (1 Wing)(Depths Vary)		
41	2	each	Concrete Junction Box (Depths Vary)		
42	4	each	Grate Inlets		
43	1	l.s.	Storm Structure 1-1 (Junction Box, Special)		
44	1	l.s.	Storm Structure 4-1 (Type "S" Inlet (1 Wing), Special)		

45	1	l.s.	Storm Structure 4-2 (Type "S" Inlet (1 Wing), Special)		
46	1	l.s.	Storm Structure 4-3, (Type "S" Inlet (2 Wing), Special)		
47	1	l.s.	Storm Structure 5-1 (Grate Inlet, Special)		
48	1	l.s.	Storm Structure 7-1 (Junction Box, Special)		
49	2	each	Remove/Raise Junction Box Ring & Cover to Grade		
50	1	each	15" Slope Paved Headwall		
51	3	each	Tie to Existing Storm Structure		
Sanitary Sewer System Improvements					
52	285	l.f.	4" PVC DI CL 52 Sanitary Sewer Lateral (includes any req'd end caps)		
53	937	l.f.	8" DI CL 52 Sanitary Sewer Main		
54	231	l.f.	10" DI CL 52 Sanitary Sewer Main		
55	8	each	Standard Precast Manhole		
56	5	each	Standard Precast Doghouse Manhole		
57	7	each	Tie to Existing Sewer Lateral		
58	1	l.s.	Bypass Pumping		
59	1168	l.f.	Post Construction Camera Inspection		
Water Distribution and Fire Protection System Improvements					
60	390	l.f.	3/4" Type "K" Copper Water Service Line (includes cap where req'd)		
61	40	l.f.	2" PVC CL 200 Watermain		
62	10	l.f.	4" D.I. CL 350 Compression Joint Watermain		
63	75	l.f.	6" D.I. Class 350 Compression Joint Watermain		
64	1322	l.f.	8" D.I. Class 350 Compression Joint Watermain		
65	253	l.f.	12" D.I. Class 350 Compression Joint Watermain		
66	3	each	8" x 8" Tapping Sleeve, Valve, and Valve Box		
67	2	each	2" Gate Valve and Valve Box		
68	1	each	4" Gate Valve and Valve Box		
69	9	each	8" Gate Valve and Valve Box		
70	6	each	12" Gate Valve and Valve Box		
71	4	each	8" DIMJ Water Main Plug (Incl. 2" Threaded Connection if Req'd)		
72	2	each	12" DIMJ Water Main Plug (Incl. 2" Threaded Connection if Req'd)		
73	8	each	Remove/Reset Existing Meter		
74	1	each	3/4" Domestic Meter and Box		
75	1	each	2" Irrigation Meter and Box		
76	2	each	Flush Assembly		
77	5	Each	Tie to Existing Watermain		
78	3	each	Cut/Cap Existing Water Main		
79	10	each	Direct Tap to Water Main		
80	3	each	Fire Hydrant Assembly		
81	1	l.s.	Pressure Testing and Disinfection (For Entire System)		
Utility Improvements (Alabama Power Company, AT&T, Comcast, Tuscaloosa Department of Transportation)					
82	1	l.s.	2" Sch 40 PVC Conduit (APCO) (+/- 1,582 l.f.)		
83	1	l.s.	3" Sch 40 PVC Conduit (APCO) (+/- 1,051 l.f.)		
84	1	l.s.	5" Sch 40 PVC Conduit (APCO) (+/- 978 l.f.)		
85	1	l.s.	1" Sch 40 PVC Conduit (AT&T) (+/- 937 l.f.)		
86	1	l.s.	4" Sch 40 PVC Conduit (AT&T) (+/- 4,910 l.f.)		
87	1	l.s.	3/4" Sch 40 PVC Conduit (TDOT) (+/- 10 l.f.)		
88	1	l.s.	1 1/4" Sch 40 PVC Conduit (TDOT) (+/- 796 l.f.)		
89	1	l.s.	1 1/2" Sch 40 PVC Conduit (TDOT) (+/- 2,907 l.f.)		
90	1	l.s.	2" Sch 40 PVC Conduit (TDOT) (+/- 1,119 l.f.)		
91	1	l.s.	4" Sch 40 PVC Conduit w\(3) 1 1/4" Innerducts (TDOT)(+/- 9000 l.f.)		
92	1	l.s.	1" Sch 40 PVC Conduit (COMC) (+/- 629 l.f.)		
93	1	l.s.	3" Sch 40 PVC Conduit (COMC) (+/- 1,782 l.f.)		
94	2	each	4'x6'x4' Pull Box (APCO) (Installation Only)		
95	2	each	Pad Mount Transformer (APCO) (Installation Only)		
96	4	each	Secondary Pedestal (APCO) (Installation Only)		
97	4	each	2.5'x4'x3' TDV Vault		
98	1	each	4'x6'x4' TDV Vault		
99	1	l.s.	Tie to Existing Conduits (From Phase 1A)		
100	5	each	Tie to Existing Residential Power Panel (Service Conversion) (APCO)		
Erosion Control					
101	1	l.s.	Erosion Control Management and Maintenance		
Traffic Control					
102	1	l.s.	Traffic Control		
103	1	l.s.	Construction Signs		

Permanent Signing and Striping					
104	428	l.f.	Solid White, Class 1, Type A Traffic Stripe (4" Wide)		
105	1033	l.f.	Dashed Yellow, Class1, Type A Traffic Stripe (4" Wide)		
106	963	l.f.	Solid Yellow, Class 1, Type A Traffic Stripe (4" Wide)		
107	306	l.f.	Solid White, Class 1, Type A Traffic Stripe (6" Wide)		
108	100	l.f.	Dotted White, Class 1, Type A Traffic Stripe (6" Wide)		
109	474	l.f.	Crosswalk Stripe (Traffic Control Markings, Class1, Type A)		
110	129	l.f.	2' Stop Bar (Traffic Control Markings, Class 1, Type A)		
111	44	l.f.	Yield Bar (Traffic Control Markings, Class 1, Type A)		
112	3	each	Only's (Traffic Control Legends, Class 1, Type A)		
113	3	each	Arrows (Traffic Control Markings, Class 1, Type A)		
114	8	each	Decorative Signs		
Miscellaneous Items					
115	100	tons	ALDOT No. 24 Stone (Miscellaneous Use As Directed by the Owner's Representative)		
116	100	tons	ALDOT No. 57 Stone (Miscellaneous Use As Directed by the Owner's Representative)		
117	100	tons	ALDOT No. 8910 Stone (Miscellaneous Use As Directed by the Owner's Representative)		
118	150	c.y.	Utility Trench Foundation Material (As Directed by Owner's Representative)		
119	1500	s.y.	Geotextile Stabilization Mat (Mirafi HP570) (Only As Directed by the Owner's Representative)		
120	1000	l.f.	6" Underdrain (As Directed by the Owner's Representative)		
121	11	each	6" Removable Bollard		
122	2	each	8' Metal Bench		
123	6	each	Trash Receptacle		
124	8	each	Remove\Reset Mailbox		
Landscaping and Irrigation Improvements					
125	229	each	Ballerina Indian Hawthorn - 3 Gallon		
126	82	each	Big Blue Liriope - 1 Gallon		
127	160	each	Coral Drift Rose - 3 Gallon		
128	148	each	Dwarf Maiden Grass - 3 Gallon		
129	60	each	Little Richard Abelia - 3 Gallon		
130	126	each	Kaleidoscope Abelia - 3 Gallon		
131	30	each	Willow Oak - 4" Caliper		
132	26	each	Commemoration Sugar Maple - 4" Caliper		
133	13	each	Nuttall Oak - 4" Caliper		
134	11	each	Chinese Pistache - 4" Caliper		
135	16	each	Sarah's Favorite Crape Myrtle - 10' to 12' Ht.		
136	26	each	Tuscarora Crape Myrtle - 10' to 12' Ht.		
137	22	each	Princeton Elm - 4" Caliper		
138	15000	s.y.	Empire Zoysia Sod		
139	300	s.y.	Bermuda Sod		
140	1000	s.y.	Permanent Seed & Mulch		
141	1	l.s.	Irrigation System - Complete In Place		
Electrical Improvements					
142	1	l.s.	Electrical Improvements		
143	2	each	Lighting Controller		
144	14	each	Street Fixture (Installation Only - Material By City)		
145	26	each	City Walk Fixture (Installation Only - Material By City)		
			Total Base Bid Cost:		

ALTERNATE NO. 1					
Install PVC Sewer Pipe In Lieu of Ductile Iron Sewer Pipe (unit cost shall be listed as additive or deductive difference to respective unit cost in base bid above)					
A1	285	l.f.	4" PVC SDR 26 Sanitary Sewer Lateral (includes any req'd end caps)		
A2	937	l.f.	8" PVC SDR 26 Sanitary Sewer Main		
			Subtotal Alternate No. 1 Cost:		
			Total Base Bid Cost + Alternate No. 1:		

Form 4
Contractors Submitting Bids
(Must be submitted in the contractor's sealed bid)

General Contractor: RYAN SHIRLEY, INC.

Contact: RYAN SHIRLEY

Name of Project: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE IB

Date Submitted: APRIL 28, 2015

All MBE/DBE/WBE Firms Submitting Bids	Scope of Work
NONE RECEIVED	

FORM 5
CONTRACTORS SUBMITTING BIDS
(Must be submitted following tentative bid award)

General Contractor: _____

Contact: _____

Name of Project: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE IB

Total Contract Amount: $ _____

Total Amount of All Subcontractors: $ _____

Date Submitted: _____

All MBE/DBE/WBE firms to be utilized	Scope of Work	Contract Amount

(Use additional pages if necessary)

Form 6
Unavailability Certification
(Must be submitted following tentative bid award)

I, _____(Name/Title), of _____ (Company) certify that on _____ (Date) I contacted the following Minority/Disadvantaged Business Enterprise to obtain proposals/bids for the following work items:

MDE/DBE/WBE Firm	Work Items Sought	Form of Proposal Sought
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

To the best of my knowledge and belief, said Minority/Disadvantaged Business Enterprises were unavailable for work on this project, or unable to prepare a proposal/bid for the following reason(s):_____
_____
_____
_____

(This form to be completed by each MBE/DBE/WBE listed, which was contacted, but did not submit a bid/proposal)

_____ (Name of MBE/DBE/WBE) was offered an opportunity to submit a proposal on the above identified work on _____ (Date) by _____ (Company Name).

The above statement is a true and accurate account of why I did not submit a proposal/bid on this project.

_____ (Signature of MBE/DBE/WBE)

_____ (Date)

_____ (Title)

(Use additional pages if necessary)

Form 7
Project Closeout Report
(To be submitted upon completion of project)

General Contractor:_____
Contact:_____
Name of Project: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE IB
Total Contract Amount: $_____
Final Contract Amount: $_____
Date Submitted:_____

All MBE/DBE/WBE firms verified	Original subcontract amount	Final subcontract amount

Form 8
Monthly Report Form
(To be submitted monthly directly to the City's consultant)

General Contractor:_____
Contact:_____
Name of Project: ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B
Total Contract Amount: $_____
Date Submitted:_____

Billings

Each MBE/DBE/WBE Contractor utilized	Original subcontract amount	Previous amount	This period amount	Total Amount

(Use additional pages if necessary)

EXHIBIT B

ADOPTED 06/25/2013
APPROVED AS TO FORM

Prepared By: GHW
Requested: Com. Dev. Com.
Presentation on: 06-25-13

Office of the City Attorney
YES

Suspension of Rules:

ORDINANCE NO. 7972

AN ORDINANCE AMENDING SECTION 2-81 OF THE CODE OF TUSCALOOSA ESTABLISHING CONTRACT PROCUREMENT STANDARDS (A12-0523)

BE IT ORDAINED BY THE CITY COUNCIL OF TUSCALOOSA AS FOLLOWS:

SECTION ONE: Chapter 2, Article VI of the Code of Tuscaloosa ("PURCHASING PROCEDURES") is amended to be read as follows:

"Sec. 2-81. Contract Procurement Standards.

(a) *Contract procurements, generally.*

1. All procurements of professional service contracts shall comply with all applicable federal, state and local laws, rules and regulations. To the extent this Chapter may conflict with any valid superseding federal or state law, it shall automatically conform to such federal or state law.

2. All procurements of public works construction and other non-professional service contracts shall comply with all applicable federal, state and local laws, rules and regulations. To this extent this chapter may conflict with any valid superseding federal or state law, it shall automatically conform to such federal or state law.

3. Unless otherwise required by federal law, rule, and/or regulation, all City of Tuscaloosa contract procurements shall comply with applicable Alabama Competitive Bid and Public Works Laws.

4. Unless otherwise required by a federal law, rule or regulation, competitive bidding shall not be required to procure the following:

a. Contracts for securing services of attorneys, physicians, architects, teachers, superintendents of construction, artists, appraisers, engineers, consultants, certified public accountants, public accountants, or other individuals possessing a high degree of professional skill where the personality of the individual plays a decisive part.

b. Contracts for fiscal or financial advice or services.

c. The selection of paying agents and trustees for any security issued by the City of Tuscaloosa.

d. Professional services contracts for codification and publication of the laws and ordinances of the City of Tuscaloosa.

e. The purchase of insurance.

5. Unless otherwise required by a federal law, rule or regulation, the Tuscaloosa City Council may adopt a resolution authorizing and awarding a professional service contract as described in Sec. 2-81(a)(3) in its discretion and without utilization of a formal or informal competitive bid process.

6. Notwithstanding the foregoing, the City may, in its discretion, issue a Request for Proposal ("RFP") or Request for Statement of Qualifications ("RFQ") to introduce a competitive element into the selection of any professional service. Generally, the RFP or RFQ may require a statement of experience and qualifications, references, a price / hourly rate quote (if applicable), and any other requirement deemed appropriate by the City that does not conflict with federal, state or local law; provided, however, that the final form of any lawful RFP or RFQ shall be in the discretion of the City and may or may not include any of the abovementioned elements, and may include additional elements.

(b) *Procurement of contracts subject to 24 CFR §85.36 requirements.*

1. *City procurement procedures to conform to federal law.* The City will use its own procurement procedures which reflect applicable State and local laws and regulations, provided that the procurements conform to applicable federal law and the standards identified in 24 CFR 85.36.

a. *Contract administration system.* The City will maintain a contract administration system through the establishment of a city representative for each contract. The City representative will monitor contract performance and consult with the Office of the City Attorney as required to ensure that contractors perform in accordance with the terms, conditions, and specifications of their contracts or purchase orders.

b. *Standards of conduct.* Elected officials, staff or agents of the City are prohibited form personally benefitting from procurements under this Section. No employee, officer or agent of the City shall participate in selection, or in the award or administration of a contract supported by federal funds if a conflict of interest as defined in 24 CFR 85.36, real or apparent, would be involved. Such a conflict would arise when the employee, officer or agent, or any member of his immediate family, his partner, or an organization which employs, or is about to employ, any of the above, has a financial or other interest in the firm selected for award. The City's officers, employees or agents will neither solicit nor accept gratuities, favors or anything of monetary value from contractors, potential contractors, or parties to subagreements. To the extent permitted by state (Title 36, Chapter 25, Alabama Code) or local law or regulations, such standards of conduct will provide for penalties, sanctions, or other disciplinary actions for violations of such standards by the officers or employees of the City of Tuscaloosa, Alabama, or agents, or by contractors or their agents.

c. *Unnecessary / duplicative items.* Prior to award, the City shall perform a review of proposed procurements to avoid purchase of unnecessary or duplicative items. Consideration should be given to consolidating or breaking out procurements to obtain a more economical purchase. Where appropriate, an analysis will be made of lease versus purchase alternatives, and any other appropriate analysis to determine the most economical approach.

d. *Responsible contractors.* The City will make awards only to responsible contractors possessing the ability to perform successfully under the terms and conditions of the procurement. Consideration will be given to such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources. The City

will require contractors to executed a "Disbarment and Suspension Statement" certifying / verifying that the contractor is not suspended or disbarred or otherwise excluded under 2 CFR Section 408.220 of the government-wide non-procurement, disbursement and suspension list.

e. *Records.* The City will maintain records sufficient to detail the significant history of a procurement. These records will include, but are not necessarily limited to the following: rationale for the method of procurement, selection of contract type, contractor selection or rejection, and the basis for the contract price.

f. *Protest procedures.* Protests made under this section shall be presented in writing to the designated City representative within three (3) days. Further protest may be handled and resolved pursuant to the same procedure established in Ala. Code § 41-16-61. To wit, any taxpayer of the area within the jurisdiction of the City and any bona fide unsuccessful bidder on a particular contract shall be empowered to bring a civil action in the appropriate court to enjoin execution of any contract entered into in violation of the provisions of this section. The City shall in all instances disclose information regarding the protest to the awarding agency. A protestor must exhaust this remedy before pursuing a protest with the Federal agency.

2. *Competition.* All procurement transactions will be conducted in a manner providing full and open competition consistent with the standards of 24 CFR § 85.36.

a. *Situations restrictive of competition.* Some of the situations considered to be restrictive of competition, and therefore prohibited, include but are not limited to:

(i) Placing unreasonable requirements on firms in order for them to qualify to do business;

(ii) Requiring unnecessary experience and excessive bonding;

(iii) Noncompetitive pricing practices between firms or between affiliated companies;

(iv) Noncompetitive awards to consultants that are on retainer contracts;

(v) Organizational conflicts of interest;

(vi) Specifying only a brand name product instead of allowing an equal product to be offered and describing the performance of other relevant requirements of the procurement; and,

(vii) Any arbitrary action in the procurement process.

b. *Geographical preferences.* The City will not impose in-State or local geographical preferences in the evaluation of bids or proposals, except in those cases where applicable Federal statutes expressly mandate or encourage geographic preference. When contracting for architectural and engineering (A/E) services, geographic location may be a selection criteria provided its application leaves an appropriate number of qualified firms, given the nature and size of the project, to compete for the contract. Nothing in this section preempts state licensing laws.

c. *Written Selection Procedures.* The City will establish written selection procedures for procurement transactions in the form of a Request for Proposal ("RFP"), Request for Statement of Qualifications ("RFQ"), sealed bid, or other pre-established procurement document for each procurement transaction. In the event that procedures are not established in the procurement document, written proposals will be rated by a pre-selected panel of qualified City employees. The panel will agree upon a rating system prior to review of proposals that will consist of either a numerical grading system or a pass/fail grading system, or a combination of the two. These procedures will ensure that all solicitations:

(i) Incorporate a clear and accurate description of the technical requirements for the material, product, or service to be procured. Such description shall not, in competitive procurements, contain features which unduly restrict competition. The description may include a statement of the qualitative nature of the material, product or service to be procured, and when necessary, shall set forth those minimum essential characteristics and standards to which it must conform if it is to satisfy

its intended use. Detailed product specifications should be avoided if at all possible. When it is impractical or uneconomical to make a clear and accurate description of the technical requirements, a brand name or equal description may be used as a means to define the performance or other salient requirements of a procurement. The specific features of the named brand which must be met by offerors shall be clearly stated; and,

(ii) Identify all requirements which the offerors must fulfill and all other factors to be used in evaluating bids or proposals.

d. *Prequalification.* If the City chooses to prequalify contractors, then the City will ensure that all prequalified lists of persons, firms, or products which are used in acquiring goods and services are current and include enough qualified sources to ensure maximum open and free competition. Also, the City will not preclude potential bidders from qualifying during the solicitation period.

3. *Methods of procurement.* Any method of procurement under this section shall comply with the requirements of 24 CFR § 85.36 and any other applicable federal, state or local law, rule or regulation, whichever requirement is stricter.

a. *Procurement by small purchase procedures.* Small purchase procedures are those relatively simple and informal procurement methods for securing services. To the extent the Alabama Competitive Bid and/or Public Works Laws establish stricter standards for procurement by small purchase procedures, the City of Tuscaloosa shall apply the stricter state law standards. Generally, all expenditure of funds of whatever nature for labor, service, work, or for the purchase of materials, equipment, supplies, or other personal property involving $15,000 or more must be competitively bid pursuant to the requirements of the Alabama Bid Law.

b. *Procurement by sealed bids (formal advertising).* Bids shall be publicly solicited and a firm-fixed-price contract (lump sum or unit price) shall be awarded to the responsible, responsive bidder whose bid, conforming with all the material terms and conditions of the invitation for bids, is the lowest in price. The sealed bid method shall be the preferred method for

procuring construction. The invitation for bids will be publicly advertised and bids shall be solicited from an adequate number of known suppliers, providing them sufficient time prior to the date set for opening the bid. The invitation for bids, which will include any specifications and pertinent attachments, shall define the items or services in order for the bidder to properly respond. All bids will be publicly opened at the time and place prescribed in the invitation for bids. A firm fixed-price contract award will be made in writing to the lowest responsive and responsible bidder. Where specified in bidding documents, factors such as discounts, transportation cost, and life cycle costs shall be considered in determining which bid is lowest. Payment discounts will only be used to determine the low bid when prior experience indicates that such discounts are usually taken advantage of. Any or all bids may be rejected if there is a sound documented reason. To the extent the Alabama Competitive Bid and/or Public Works Laws establish stricter standards for procurement by sealed bids (formal advertising), the City of Tuscaloosa shall apply the stricter state law standards. Before entering into any contact for a public works involving an amount in excess of $50,000, the City of Tuscaloosa shall advertise for sealed bids. In order for sealed bidding to be feasible, the following conditions must be present:

(i) A complete, adequate, and realistic specification or purchase description is available;

(ii) Two or more responsible bidders are willing and able to compete effectively and for the business; and

(iii) The procurement lends itself to a firm fixed price contract and the selection of the successful bidder can be made principally on the basis of price.

b. *Procurement by competitive proposals.* If this method is used, the following requirements apply:

(i) Requests for proposals will be publicized and identify all evaluation factors and their relative importance. Any response to publicized requests for proposals shall be honored to the maximum extent practical;

(ii) Proposals will be solicited from an adequate number of qualified sources;

(iii) The method for conducting technical evaluations of the proposals received and for selecting awardees will be established in the Request for Proposal ("RFP"), Request for Statement of Qualifications ("RFQ"), or other pre-established procurement document for each procurement transaction. In the event that procedures are not established in the procurement document, written proposals will be rated by a pre-selected panel of qualified City employees. The panel will agree upon a rating system prior to review of proposals that will consist of either a numerical grading system or a pass/fail grading system, or a combination of the two;

(iv) Awards will be made to the responsible firm whose proposal is most advantageous to the program, with price and other factors considered; and,

(v) In its discretion, the City may use competitive proposal procedures for qualifications-based procurement of architectural/engineering (A/E) professional services whereby competitors' qualifications are evaluated and the most qualified competitor is selected, subject to negotiation of fair and reasonable compensation. The method, where price is not used as a selection factor, can only be used in procurement of A/E professional services. It cannot be used to purchase other types of services though A/E firms are a potential source to perform the proposed effort.

(vi) To the extent the Alabama Competitive Bid and/or Public Works Laws establish stricter standards for procurement by competitive proposals, the City of Tuscaloosa shall apply the stricter state law standards.

c. *Procurement by noncompetitive proposals.* Procurement by noncompetitive proposals is procurement through solicitation of a proposal from only one source, or after solicitation of a number of sources, competition is determined inadequate. Procurement by noncompetitive proposals may be used only when the award of a contract is infeasible under small purchase procedures, sealed bids or competitive proposals and one of the following circumstances applies:

(i) The item is available only from a single source;

(ii) The public exigency or emergency for the requirement will not permit a delay resulting from competitive solicitation;

(iii) The awarding agency authorizes noncompetitive proposals; or

(iv) After solicitation of a number of sources, competition is determined inadequate.

Cost analysis (i.e. verifying the proposed cost data, the projections of the data, and the evaluation of the specific elements of costs and profits) is required.

4. *Contracting with small and minority firms, women's business enterprise and labor surplus area firms.* The City will take all necessary affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used when possible. Affirmative steps shall include: placing qualified small and minority businesses and women's business enterprises on solicitation lists; assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources; dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises; establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises; using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and, requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in this section.

5. *Contract cost and price.* The City shall perform a cost or price analysis in connection with every procurement action including contract modifications. The method and degree of analysis is dependent on the facts surrounding the particular procurement situation, but as a starting point, the City must make independent estimates before receiving bids or proposals. A cost analysis must be performed when the offeror is required to submit the elements of his estimated cost, e.g., under professional, consulting, and architectural

engineering services contracts. A cost analysis will be necessary when adequate price competition is lacking. A price analysis will be used in all other instances to determine the reasonableness of the proposed contract price. The City will negotiate profit as a separate element of the price for each contract in which there is no price competition and in all cases where cost analysis is performed. To establish a fair and reasonable profit, consideration will be given to the complexity of the work to be performed, the risk borne by the contractor, the contractor's investment, the amount of subcontracting, the quality of its record of past performance, and industry profit rates in the surrounding geographical area for similar work. Costs or prices based on estimated costs for contracts under grants will be allowable only to the extent that costs incurred or cost estimates included in negotiated prices are consistent with Federal cost principles. The City may reference its own cost principles that comply with the applicable Federal cost principles. The cost plus a percentage of cost and percentage of construction cost methods of contracting shall not be used.

6. *Bonding requirements.* For construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold, the following minimum requirements shall apply:

a. The City shall require a bid guarantee from each bidder equivalent to five percent of the bid price. The "bid guarantee" shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of his bid, execute such contractual documents as may be required within the time specified.

b. The City shall require a performance bond on the part of the contractor for 100 percent of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

c. The City shall require a payment bond on the part of the contractor for 100 percent of the contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

d. To the extent the Alabama Competitive Bid and/or Public Works Laws establish stricter standards for bonding requirements, the City of Tuscaloosa shall apply the stricter state law standards.

7. *Contract provisions.* Contracts procured pursuant to this section shall contain the following contract provisions:

a. *Violation or breach of contract terms.* If the Contractor is adjudged as bankrupt, or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency, or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a substantial violation of a provision of the agreement, or is assessed liquidated damages as set forth herein, then the City may, without prejudice to any of its other rights or remedies and after giving the Contractor and his surety, if any, seven (7) days' written notice, during which period the Contractor fails to cure the violation, terminate the employment of the Contractor. In such case, the Contractor shall not be entitled to receive any further payment from the City.

b. *Termination for cause and for convenience.* The City reserves the right with or without cause to terminate the agreement by giving written notice to Contractor of such termination at least fifteen (15) days before the effective date thereof. In the event of termination, Contractor shall cease performing any work pursuant to the agreement and be entitled to compensation for services rendered through the effective date of termination.

c. *Access to records.* The City, any subgrantee, the Federal grantor agency, the Comptroller General of the United States, or any of their duly authorized representatives shall have access to any books, documents, papers, and records of the Contractor which are directly pertinent to the contract for the purpose of making audit, examination, excerpts, and transcriptions.

d. *Retention of records.* Contractor is required to retain all records as required by applicable federal law for three years after the City or any or subgrantee makes final payments and all other pending matters are closed.

e. *Compliance, generally.* For contracts in excess of $100,000, Contractors are required to comply with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15).

f. *Energy efficiency.* Contractors are required to comply with the mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163, 89 Stat. 871).

g. *Value engineering.* For architectural/engineering (A/E) contracts, Contractor is encouraged to develop, prepare, and submit to the City value engineering change proposals (VECP's) voluntarily. Value engineering change proposal (VECP) means a proposal that requires a change to this, the current contract, to implement, and results in reducing the overall projected cost to the City without impairing essential functions or characteristics."

h. *Equal Employment Opportunity.* Contractors shall comply with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR chapter 60). (Applies to all construction contracts awarded in excess of $10,000 by grantees and their contractors or subgrantees).

i. *Anti-Kickback.* Contractors shall comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3). (Applies to all contracts and subgrants for construction or repair).

j. *Davis-Bacon.* Contractors shall comply with the Davis-Bacon Act (40 U.S.C. 276a to 276a-7) as supplemented by Department of Labor regulations (29 CFR Part 5). (Applies to all construction contracts in excess of $2,000 awarded by grantees and subgrantees when required by Federal grant program legislation).

j. *Work Hours and Safety Standards.* Contractors shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor regulations (29 CFR Part 5). (Applies to all construction contracts awarded by grantees and subgrantees in excess of $2,000, and in excess of $2,500 for other contracts which involve the employment of mechanics or laborers.

k. *Miscellaneous.* All contracts shall contain provisions giving notice of awarding agency requirements and regulations pertaining to reporting, notice of awarding agency requirements and regulations pertaining to patent rights with respect to any discovery or invention which arises or is developed in the course of or under such contract, and awarding agency requirements and regulations pertaining to copyrights and rights in data.

FUNDING REQUIRED: ☐ **Yes** ☒ **No**

_____
_____
_____
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_____
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_____
_____
_____

By: _____
Finance Director

_____

COUNCIL ACTION

Resolution _____
Ordinance _____
Introduced _____
Passed _____

2nd Reading _____
Unanimous _____
Failed _____
Tabled _____

Amended _____
Comments: _____

General Decision Number: AL150002 01/02/2015 AL2

Superseded General Decision Number: AL20140002

State: Alabama

Construction Type: Highway

Counties: Blount, Calhoun, Etowah, Shelby, St Clair and Tuscaloosa Counties in Alabama.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, bulding structures in rest areas projecs, and railroad construction; bascule, suspension & spandrel arch bridges desgned for commercial navigation; bridges involving marine construction; other major bridges)

Note: Executive Order (EO) 13658 establishes an hourly minimum wage of $10.10 for 2015 that applies to all contracts subject to the Davis-Bacon Act for which the solicitation is issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.10 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/02/2015

* SUAL2011-001 01/04/2011

	Rates	Fringes
Carpenter	$ 13.88	
Concrete finisher	$ 13.26	
Electrician	$ 19.73	
Laborers:		
Asphalt Raker	$ 11.23	
Concrete Laborer	$ 10.84	
Grade Checker	$ 12.58	
Guardrail Erector	$ 12.47	
Pipe Layer	$ 12.58	
Side Rail/Form Setter	$ 11.97	
Traffic Control Specialist	$ 11.27	
Unskilled	$ 9.84	
Power equipment operators:		
Aggregate Spreader	$ 14.17	
Asphalt Distributor	$ 14.27	
Asphalt Paver	$ 11.85	
Asphalt Spreader	$ 13.65	
Backhoe, Clamshell,		

Dragline, and Shovel.....$ 15.87
Broom (Sweeper).....$ 11.68
Bulldozer.....$ 14.73
Crane & Derrick.....$ 20.63
Front End Loader.....$ 13.38
Mechanic.....$ 17.54
Milling Machine.....$ 12.31
Motor Grader and Motor
Patrol.....$ 16.10
Oiler/Greaseman.....$ 13.33
Roller (Self-Propelled).....$ 12.38
Scraper.....$ 13.00
Striping Machine.....$ 15.20
Track Hoe/Excavator.....$ 14.64
Tractor and Loader (farm
rubber tired).....$ 11.40
Tractor/Loader (all other
work).....$ 11.22

Truck drivers:
Multi-Rear Axle.....$ 12.25
Single Rear Axle.....$ 11.54

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the

most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour

Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

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SECTION 01010 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to the Section.

1.2 Project Identification

A. The project shall generally include the construction of roadway, private utility and City technology and lighting duct banks, street lighting, storm drainage, sanitary sewer, water distribution, landscaping, irrigation, and other improvements necessary for the completion of the above. The approximate quantities of said Project are as follows: approximately 6,000 sy of roadway, 12,000 lf of curb, 1,800 lf of storm drainage (15" through 30"), 1,200 lf of sanitary sewer, 1,700 lf of water distribution, multiple utility conduit duct banks, light poles, landscaping, and irrigation.

1.3 Contractor Use of Premises

A. General: During the construction period, the Contractor shall have full use of the premises for construction operations, including use of the site. The Contractor's use of the premises is limited only by the Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of the project.

END OF SECTION 01010

SECTION 01300 - SUBMITTALS

PART 1 - SUBMITTALS

1.1 General

A. This section of specifications covers the General Requirements for the preparation and assembly of submittals during the progress of the work. Any questions concerning the submittal process should be directed to the Engineer.

1.2 Administrative Submittals

A. All administrative submittals required in the Bid Documents, General Conditions, Supplementary Conditions, or Technical Specifications shall be provided by the Contractor. These submittals include but are not limited to payrolls, construction schedules, EEO documentation (if required), etc.

B. All permits to Federal, State or Local authorities shall be submitted promptly by the Contractor.

C. The Contractor shall submit on a daily basis the number of persons employed in the construction process, both Contractor and Subcontractor personnel, their classification, equipment used during the day, equipment added or deleted from the jobsite and the amount of work accomplished in each classification of work performed that day.

1.3 Technical Submittals

A. All submittals shall be bound with a Table of Contents, clearly indicating all included material submittals.

B. Completely identify each submittal and re-submittal by showing at least the following information.

1. Name and address of submitter, plus name and telephone number of the individual who may be contacted for further information.

2. Name of project as it appears in the bid documents.

3. Drawing number and specifications section number to which the submittal applies.

4. Whether this is an original submittal or resubmittal.

C. Prior to submittal for Engineer's review, use all means necessary to fully coordinate all material, including the following procedures:

1. Determine and verify all field dimensions and conditions, materials, catalog numbers, and similar data.

2. Coordinate as required with all trades and with all public agencies involved.

3. Secure all necessary approvals from public agencies and others and signify by stamp, or other means, that they have been secured.

4. Clearly indicate all deviations from the Contract Documents.

D. Grouping of Submittals: Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items; the Engineer may reject partial submittals as not complying with the provisions of the Contract Documents.

E. General: Make all submittals far enough in advance of scheduled dates of installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.

F. In scheduling, allow at least seven (7) full working days for the Engineer's review following his receipt of the submittal.

1. Delays: Cost of delays occasioned by tardiness of submittals may be back-charged as necessary and shall not be borne by the Owner.

1.4 Substitutions

A. Engineer's Approval Required: The Contract is based on materials, equipment, and methods described in the Contract Documents:

1. The Engineer will consider proposals for substitution of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data and all other information required by the Engineer to evaluate the proposed substitution.

2. Do not substitute materials, equipment, or methods unless such substitution has been specifically accepted, in writing, for this work by the Engineer.

B. Or Equal: Where the phrase "or equal" or "or equal as approved by the Engineer" occurs in the Contract Documents, do not assume that material, equipment, or methods will be approved as equal by the Engineer unless the item has been specifically accepted, in writing, for this work by the Engineer.

1. The decision of the Engineer shall be final.

1.5 Shop Drawings

A. Scale Required:

1. Unless otherwise specifically directed by the Engineer, make all Shop Drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the work.

B. Type of Prints Required:

1. Unless otherwise specifically directed by the Engineer, make all Shop Drawing prints in blue or black line on white background.

C. Number of Prints Required:

1. Submit all Shop Drawings in the quantity which is required to be returned plus four copies which will be retained by the Engineer.

1.6 Copies Required

A. In general, unless directed otherwise by the Engineer, the Contractor's submittals shall be in sufficient quantities to allow four (4) copies to be retained by the Engineer.

1.7 Work Performed Prior to Submittal Acceptance

A. Any and all work performed by the Contractor prior to submittal review shall be at the Contractor's risk. No payment shall be made on items prior to a reviewed submittal.

END OF SECTION 01300

SECTION 01400 – QUALITY REQUIREMENTS

1.1 Summary

A. This section includes the following quality requirements:

1. Submittal Procedure.
2. References and standards.
3. Testing and Inspection Agencies.
4. Mock ups.
5. Control of installation.
6. Tolerances.
7. Testing and inspection services.
8. Manufacturers' field services.

1.2 SUBMITTALS

A. Design Data: Submit for Architect's knowledge as contract administrator or for the Developer, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

B. Test Reports: After each test/inspection, promptly submit two copies of report to General Contractor and to Contractor.

1. Include:
   a. Date issued.
   b. Project title and number.
   c. Name of inspector.
   d. Date and time of sampling or inspection.
   e. Identification of product and specifications section.
   f. Location in the Project.
   g. Type of test/inspection.
   h. Date of test/inspection.
   i. Results of test/inspection.
   j. Conformance with Contract Documents.
   k. When requested by Architect, provide interpretation of results.
2. Test reports are submitted for information for the limited purpose of assessing conformance with nformation given and the design concept expressed in the contract documents.

C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor, in quantities specified for Product Data.

1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product but must be acceptable to General Contractor .

D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

E. Manufacturer's Field Reports: Submit reports as required:

1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

F. Erection Drawings: Submit drawings as required:

1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
2. Data indicating inappropriate or unacceptable Work may be subject to action by General Contractor or Owner.

1.3 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference 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 of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 TESTING AND INSPECTION AGENCIES

A. Owner will employ and pay for services of an independent testing agency to perform specified. testing and inspection.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

C. Owner Employed Agency:
1. Testing agency: Comply with requirements of ASTM E 329, ASTM E 548, ASTM E 543, ASTM C 1021, ASTM C 1077, ASTM C 1093, and ASTM C 1021.
2. Inspection agency: Comply with requirements of ASTM D290.
3. Laboratory: Authorized to operate in State in which Project is located.
4. Laboratory Staff Maintain a full time registered Engineer on staff to review services.
5. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.5 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 General Contractor 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. Have Work performed 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, and disfigurement.

1.6 MOCK UPS

A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock ups shall be a comparison standard for the remaining Work.

Where mock up has been accepted by General Contractor and is specified in product specification sections to be removed, remove mock up and clear area when directed to do so.

1.7 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 before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.8 TESTING AND INSPECTION

A. See individual specification sections for testing and inspection required.

B. Testing Agency Duties:
1. Provide qualified personnel at site. Cooperate with General Contractor and Contractor in performance of services.
2. Perform specified sampling and testing of products in accordance with specified standards.
3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
4. Promptly notify General Contractor and Contractor of observed irregularities or non conformance of Work or products.
5. Perform additional tests and inspections required by General Contractor .
6. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the Work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
   a. To provide access to Work to be tested/inspected.
   b. To obtain and handle samples at the site or at source of
   c. Products to be tested/inspected.
   d. To facilitate tests/inspections.
   e. To provide storage and curing of test samples.
4. Notify General Contractor and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Retesting required because of nonconformance to specified requirements shall b e performed by the same agency on instructions by General Contractor . Payment for re testing will be charged to the Contractor by deducting testing charges from the Contract Price.

1.9 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, and test, adjust and balance 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.

1.10 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of General Contractor, it is not practical to remove and replace the Work, General Contractor will direct an appropriate remedy or adjust payment.

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

1.1 General

A. Temporary facilities and controls required for this Work include, but are not necessarily limited to:

1. Temporary utilities such as gas, water, electricity, and telephone;
2. Field offices and sheds;
3. Sanitary facilities;
4. Enclosures such as tarpaulins, barricades and canopies;
5. A project sign;
6. Fencing of the construction area;
7. Haul Road.

1.2 Temporary Utilities

A. The Contractor shall provide and pay all costs associated with the furnishing, installing, maintaining and removal of all temporary utilities.

B. Temporary utilities shall be in strict compliance with all federal, state and local codes and meet all safety requirements specified by OSHA and as necessary for good safety practice.

1.3 Field Offices and Other Facilities

A. The Contractor shall provide, maintain and remove as required field offices, sheds, and storage areas as needed in the work. **(NA)**

B. The Contractor shall provide and maintain a field office for the Engineer and Inspectors. The Contractor shall provide and pay for all utilities as required. The Contractor shall maintain such field offices in a clean and sanitary condition. **(NA)**

C. Engineer's field office shall meet the following minimum requirements: **(NA)**

1. Minimum floor Area: 400 square feet
2. Number of Offices: Two(2)
3. Toilet Facilities: One(1)
4. Minimum Number of Lockable Entrances: Two(2)
5. Heated and Cooled
6. Railed Stairway to Entrances
7. 110 Volt Wall Plugs
8. Ample lighting
9. One(1) 4' x 6' drawing table
10. One(1) 4-drawer metal file cabinet

D. The Contractor shall maintain such areas free of trash and debris, and store materials in a neat and orderly fashion.

E. The Contractor shall provide fencing and other materials as necessary for the proper protection of stored materials.

F. No sidewalk, private property, or right-of-way shall be used for storage of Contractor's equipment or materials unless a written authorization is obtained from the legal owner. A copy of the written authorization shall be provided to the Owner before final payment.

G. After completion of construction, the contractor shall remove all fencing, excess construction materials, etc. from private property, sidewalks and such and obtain a written release from the legal owner.

1.4 Sanitary Facilities

A. The Contractor shall provide, maintain, and remove, as required, sanitary facilities for use by his employees, and subcontractor employees and comply with the regulations of state and local health department regulations and as directed by the Engineer.

B. The Contractor shall provide trash receptacles for use by his employees and subcontractor employees. No trash and/or refuse shall be allowed to be thrown into trenches during excavations on the project site. All such trash and/or refuse shall be removed at once even if it requires re-excavating.

END OF SECTION 01500

SECTION 01506 - SANITARY FACILITIES

PART 1 - GENERAL

1.1 Work Included

A. Furnish and install all required temporary toilet buildings with sanitary toilets for use of all workmen; comply with all minimum requirements of the Health Department or other public agency having jurisdiction; maintain in a sanitary condition at all times.

END OF SECTION 01506

SECTION 01600 - MATERIALS

PART 1 - MATERIALS

1.1 General

A. Material shall be new and without any indication of damage or overage. If usually packaged bring to job in original unbroken labeled containers. Materials not specified but required, shall be of a grade equal or superior to related parts of work.

1.2 Brand Names

A. Mentioned herein to establish a standard of design and quality, except when indicated in subsequent sections in regard to each particular item. Qualified pre-bid approval may be given to various vendors at their request on products for various vendors at their request on products for which pre-bid approval is not required; such approvals will be communicated only to the vendor.

B. Where three or more manufacturers are listed, the product must be furnished by one of the manufacturers so listed unless specific approval of other brand is obtained in writing. Comparison of substitute brands will be with the first name of those listed.

C. By requesting approval of or by making a substitution, the Contractor shall certify that the product substituted is in all respects equal to, and will function equally well in the project, as the product specified. The Architect/Engineer, at his discretion may require the certification in writing.

D. See General Conditions Par. 11 for additional requirements.

1.3 Installation

A. Install, apply, connect, clean and operate all materials and equipment per manufacturer's directions and recommendations. In event of conflict between specifications and manufacturer's directions, obtain Instructions from Engineer.

1.4 Color Selections

A. The Architect's/Engineer's color schedule will be prepared for color only; it will not justify deviations from Contract requirements (such as changing of finish material, type of paint, etc.) which must be made by Change Order. Where color numbers and names conflict, secure instructions before proceeding.

B. The Owner shall make final selection of all material colors.

1.5 Foreign Materials

A. In accordance with State Law, provide only materials manufactured, mined or processed in the United States or its territories, provided same are available at reasonable prices.

END OF SECTION 01600

SECTION 01600 - MATERIALS

PART 1 - GENERAL

1.1 Section

A. Materials shall be new and without any indication of damage or overage.
Unless specified otherwise in Contract Documents, material shall be specified per
applicable standard and shall be a grade equal or superior to relative parts of work.

1.2 Substitutions

A. Material used shall be specified in the Contract Documents, except where substitution
is requested in writing for specific items. Detailed substitution may be granted
where material is not readily available or provides advantages not otherwise
available. Substitutions will be communicated only via the vendor
who provided the original bid.

B. Where proprietary manufacturers are listed, the product must be furnished by one of the
manufacturers listed unless specific approval of other brand is obtained in writing. Substitution
of substitute brands will be with the approval of these listed.

C. By requesting approval of or by making a substitution, the Contractor shall certify that the proposed
substitution is of a grade equal to, and will perform equally well in the project as the product
specified. The Architect/Engineer, at his discretion may require the certification in writing.

D. See General Conditions Part 17 for additional requirements.

1.3 Identification

A. Material, supply containers, cleaning and operating materials and equipment per manufacturer's directions
and recommendations. In event of conflict between specifications and manufacturer's directions,
obtain instructions from Engineer.

1.4 Color Selections

A. The architect will provide color samples within 30 days of award of contract. Samples will be
from Contractor's preference (if no architectural finish chosen). Once chosen, any future modifications
made by Owner to color will require additional cost.

B. The Owner shall have final selection of all material colors

1.5 Specialty Materials

A. Items specified with Stone will provide only materials manufactured, mined or
processed in the United States or its territories provided such are available in reasonable quantities

END OF SECTION 01600

SECTION 01800 - DETERMINATION OF PAY QUANTITIES & PAYMENT

1. Payment and Performance Bonds (Item #1) – Payment for "Payment and Performance Bonds" shall be made at the unit price bid, per lump sum, and shall be compensation in full for furnishing all labor and incidentals necessary to complete the work. Payment for this item amount will not be paid until the payment and performance bonds are submitted. Compensation made as part of this pay item shall not exceed 2% of the total bid amount. Payment of 50% of the bid amount shall be made on the first estimate. Payment for the remaining 50% of the bid amount shall be made when 25% of the contract amount is earned.

2. Mobilization and Demobilization (Item #2) – Payment for "Mobilization and Demobilization" shall be made at the unit price bid, per lump sum, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Compensation made as part of this pay item shall be for costs associated with the site work portion of this contract only. No additional payment, above the bid amount for this pay item, shall be made regardless of the fact that the contractor may have, for any reason, shut down work on the project and / or moved equipment away from the project and back again. Payment of 20% of the mobilization bid amount shall be made on the first estimate. Payment of an additional 50% of the bid amount shall be made when 5% of the site work subtotal amount of the contract is earned. Payment for the remaining 30% of the bid amount shall be made when 50% of the site work subtotal amount of the contract is earned.

3. Demolition, Clearing, and Grubbing (Item #3) – Payment for "Demolition, Clearing, and Grubbing" shall be made at the unit price bid, per lump sum, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Clearing and Grubbing is defined in Specification Section 02110 and also covers the removal of items not specifically called out in a line item on the schedule of quantities such as abandoned clay, PVC, RCP, ductile iron, steel utility piping, concrete and brick sewer structures, concrete curbing, sidewalk, asphalt and concrete roadway, trees, tree stumps (full removal), etc. When installing proposed utility piping, all saw-cutting and roadway removal shall be included in this bid item. After patching of the roadway and subsequent complete roadway removal payment shall be made in bid item no. 7. Existing pavement removal shall not be paid for twice. Any work required in the plans and specifications that do not have an associated pay item shall be performed as a subsidiary obligation to this pay item at no additional cost. Payment for this bid item shall be made as percent complete of the overall project area. As the project is demolished, cleared, and grubbed the Contractor shall receive payment for the area he/she completed as a percentage of the overall project area. Full payment shall not be made until all existing areas are demolished, cleared, and grubbed and required items are being installed. It should be noted that this project shall be demolished, cleared and grubbed in phases and not all at once. As the project progresses, additional areas shall be prepared.

4. Remove and Stone Backfill of Existing Pipe (4"and Larger, All Materials) (Item #4) – Payment for "Remove and Stone Backfill of Existing Pipe" shall be made at the unit price bid, per linear feet, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary for complete removal of existing piping (4" and larger) outside proposed utility trenches and excavation areas. Upon removal of the existing piping, the Contractor shall backfill with the appropriate materials as note on the plans and at the proper compaction requirements as noted in the trench details on the Construction Plans for paved and nonpaved areas. There shall be no additional payment for backfill materials as it shall be included in the removal unit price. Removal of any piping less than 4" shall be incidental to the project. There shall be no payment for removal of existing piping located in proposed utility trenches and excavation areas.

5. Remove Existing Sanitary and Storm Sewer Structures and Backfill (Item #5) – Payment for "Remove Existing Sanitary and Storm Sewer Structures and Backfill" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The existing sanitary and storm sewer structures including, but not

limited to, grates, inlets, junction boxes, and manholes shall be completely removed. Filling with grout shall not be allowed. Upon removal of the existing structures the Contractor shall backfill with the appropriate materials as noted in the plans and at the proper compaction requirements as noted in the trench details on the Construction Plans for paved and nonpaved areas. There shall be no additional payment for backfill materials as it shall be included in the removal unit price.

6. Slurry Fill of Abandoned Pipes (Item #6) – Payment for "Slurry Fill of Abandoned Pipes" shall be made at the unit price bid, cubic yard, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. No extra payment will be made for plugs, opening the pipe at sufficient intervals to install the slurry fill and to release air, pavement patches in areas not designated to be patched on the Drawings, surface restoration including providing and installing pavement replacement materials, topsoil, seed and sod, special equipment or cleanup work, but costs for these items shall be included in the pay item for Slurry Fill of Abandoned Pipes. Haul tickets shall be collected the day of delivery and logged for payment. Failure to provide haul tickets for that day's cubic yards hauled will forfeit payment for that amount placed. Miscellaneous haul tickets turned in randomly at the end of the month for payment shall be ignored.

7. Remove Existing Pavements (Item #7) – Payment for "Remove Existing Pavements" shall be made at the unit price bid, per square yard, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. This pay item compensates the Contractor for the removal and disposal of all existing pavements including asphalt and concrete roadway, drives, sidewalk, curb and gutter, gutters, curbs, etc. found on the project. Thicknesses of these pavements vary. Information regarding the existing asphalt pavement thickness can be found in the geotechnical report. All pavements to be removed to complete this project and as shown on the plans have been surveyed and quantified to the amount of 4,207 s.y. As pavement is removed it shall be paid for on each pay request. After all pavements have been removed this full quantity shall be paid. The only way this quantity shall differ from bid quantity is as directed by the Owner's Representative due to field conditions.

8. Remove Existing Fire Hydrant Assembly (Item #8) – Payment for "Remove Existing Fire Hydrant Assembly" shall be made at the unit price bid, per each as shown on the Construction Plans, and shall be compensation in full for furnishing all equipment, tools, labor and incidentals necessary to complete the work. Removal of fire hydrant assembly shall include removal of the fire hydrant, 6" gate valve, and 6" piping and when required installing a plug in the hydrant tee at the main. Upon removal, the Contractor shall backfill with the appropriate materials and at the proper compaction requirements as noted in the trench details on the Construction Plans for paved and nonpaved areas. There shall be no additional payment for backfill materials as it shall be included in the removal unit price. Payment will be made only for quantities removed. No extra payment will be made for coordination of existing water system shutdown, delivery of removed materials to the City, site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, special equipment or cleanup work, and required testing, but costs for these items shall be included in this pay item.

9. Earthwork (Item #9) – Payment for "Earthwork" shall be made at the unit price bid, per lump sum, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Earthwork shall include Topsoil Stripping, Stockpiling, and/or Offsite Removal throughout the project site, Unclassified Excavation, Borrow Excavation, and/or removal and offsite disposal of any excess material, to bring the site to finished subgrade (only leaving pavements and topsoil to reach final finished grade) as shown on the Construction Plans. No extra payment will be made for excess material brought on-site, material required to be moved multiple times because of construction phasing, or excess material required to be hauled and disposed of offsite. Haul tickets shall not be considered a valid determination of excavated material. Payment shall be made in percentage of work complete at the time of pay request each month. The Contractor shall review all requirements noted on the Construction Plans, Project Notes, and Geotechnical Report.

10. Topsoil (Item #10) – Payment for "Topsoil" shall be made at the unit price bid, per lump sum, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Topsoil shall be installed in varying depths in new medians, planter areas, shrub bed areas, sodded and/or seeded areas, areas where pavement is removed, areas impacted by utility construction, etc. as defined on the plans. The Owner's Representative shall approve ALL finished subgrade before topsoil is installed. Upon approval of all finished subgrade, the Contractor may install topsoil. The final grading and depth of topsoil shall be reviewed and approved in advance of landscape improvements installation. The Contractor shall be responsible for removing all temporary stone from final topsoil regardless of the amount. The Contractor shall pay close attention to the requirements for the topsoil. Topsoil proposed to be used shall have a sample analyzed by an approved laboratory i.e.- Auburn University, etc. Any necessary nutrients/treatments shall be added before planting. The Contractor shall allow ample time for testing, delivery of test results, and review and instructions.

11. Removal/Disposal/Replacement of Unsuitable Material (Item #11) – Payment for "Removal/Disposal/Replacement of Unsuitable Material" shall be made at the unit price bid, per cubic yard in place (CYIP) removed, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Payment for this item will include Excavation of Unsuitable Material, off-site disposal, and placement of approved off-site Borrow Excavation required to return the ground back to its original elevation in the event Unsuitable Material is encountered on-site. Haul tickets shall not be considered a valid determination of quantities. The Contractor shall notify the Owner's Representative before any unsuitable material is excavated, so the area may be delineated and removal depths measured to derive the cubic yards of removal for payment. Failure to notify the Owner's Representative and performing unsuitable excavation and filling operations without his/her presence for measurement shall forfeit payment of that amount of unobserved work.

12. Milling/Planing Existing Pavement (Thickness Varies) (Item #12) – Payment for "Milling/Planing Existing Pavement (Thickness Varies)" shall be made at the unit price bid, per square yard, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The approximate thickness of the asphalt to be planed/milled varies. There shall be no additional payment for depth of planing/milling to be completed. Planing/milling shall be completed as necessary to meet the design, details, notes, etc. set forth in the Construction Plans and Specifications.

13. Roadbed Processing (Item #13) – Payment for "Roadbed Processing" shall be made at the unit price bid, per square yard, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Roadbed Processing is defined in Section 230 of the ALDOT Standard Specifications for Highway Construction, Latest Edition.

14. Crushed Aggregate Base Course, ALDOT Section 825, Type B (Item #14-15) – Payment for "Crushed Aggregate Base Course, ALDOT Section 825, Type B" shall be made at the unit price bid, per Square Yard Compacted In Place (SYCIP) and shall be compensation in full for furnishing all materials, equipment, tools, labor, and incidentals necessary to complete the work. Crushed Aggregate Base Course, Type B referred to as base material, thicknesses are defined in the typical sections and the material is defined in section 825 of the ALDOT Standard Specifications for Highway Construction, Latest Edition. Square Yards will be calculated be multiplying the length and width of the placed material. Only placed and compacted materials will be paid for. Haul tickets shall not be considered a valid determination of base material. Crushed Aggregate placed in areas other than areas defined by the plans, including pipe and structure backfill are not eligible for payment under this item. Base material shall be placed per the typical sections or as directed by the Owner's Representative.

15. Bituminous Treatment A (Item #16) – Payment for "Bituminous Treatment A" shall be made at the unit price bid, per square yard, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Bituminous Surface Treatment A, also

referred to as Prime Coat, is defined in the typical sections and the material is defined in section 400 of the ALDOT Standard Specifications for Highway Construction, Latest Edition.

16. Tack Coat (Item #17) – Payment for "Tack Coat" shall be made at the unit price bid, per gallon, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Tack Coat is defined in section 405 of the ALDOT Standard Specifications for Highway Construction, Latest Edition.

17. Bituminous Concrete Wearing and Binder Layers (Item #18-19) – Payment for "Improved Bituminous Concrete Wearing and Binder Layers" shall be made at the unit price bid, per square yards of specified mix, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Paving courses and corresponding weights are defined in the typical sections and the material is defined in section 424 of the ALDOT Standard Specifications for Highway Construction, Latest Edition.

18. Temporary Asphalt Patching (Item #20) – Payment for "Temporary Asphalt Patching" shall be made at the unit price bid, per square yards of specified mix, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The temporary asphalt patch shall be used for utility road crossings, existing utility exploration, etc. in the existing roadway as defined by the design, details, notes, etc. This includes but is not limited to storm, sanitary, water, private utilities, etc. Temporary Asphalt Patch shall be used to allow traffic access back in location of proposed utility installation. Upon completion of utility installation and start of final roadway construction, any temporary asphalt patching shall be removed and the roadbed graded and prepared as required by the plans to meet the roadway design buildup and grades.

19. Concrete Driveway (Item #21) – Payment for "Concrete Driveway" shall be made at the unit price bid, per square yards of specified thickness, and shall be compensation in full for furnishing all materials, reinforcement, tools, labor and incidentals necessary to complete the work. Driveway thicknesses are defined in the typical sections.

20. Concrete Pavement (Item #22) – Payment for "Concrete Pavement" shall be made at the unit price bid, per square yards of specified thickness, and shall be compensation in full for furnishing all materials, reinforcement, tools, labor and incidentals necessary to complete the work. Driveway thicknesses are defined in the typical sections.

21. Concrete Speed Table (Item #23) – Payment for "Concrete Speed Table" shall be made at the unit price bid, per square yards of specified thickness, and shall be compensation in full for furnishing all materials, reinforcement, tools, labor and incidentals necessary to complete the work. Driveway thicknesses are defined in the typical sections.

22. Concrete Sidewalk (Item #24) – Payment for "Concrete Sidewalk" shall be made at the unit price bid, per square yards of specified thickness, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work as detailed in the plans. Sidewalk thicknesses and widths are defined in the Construction Plans. Payment for concrete sidewalk shall also include stone base material. Material and thickness are as defined in the plans.

23. Concrete City Walk (Item #25) – Payment for "Concrete City Walk" shall be made at the unit price bid, per square yards of specified thickness, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work as detailed in the plans. City Walk thicknesses and widths are defined in the Construction Plans. Payment for concrete City Walk shall also include stone base material. Material and thickness are as defined in the plans.

24. Truncated Dome Pavers (Item #26) – Payment for "Truncated Dome Pavers" shall be made at the unit price bid, per square feet of specified thickness, and shall be compensation in full for furnishing all materials (including brick pavers, mortar, etc.), equipment, tools, labor and incidentals necessary to complete the work as detailed in the plans. Decorative brick paver/concrete sidewalk thicknesses, brick paver borders, truncated dome brick pavers, road transitions to sidewalk, etc. are defined on the Construction Plans. A test section shall be constructed and approved before being installed throughout the project. Consistency of joints, color, and truncated dome dimensions and finish shall be examined very closely.

25. Handicap Ramps (Item #27) – Payment for "Handicap Ramps" shall be made at the unit price bid, per each and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work as detailed in the plans. This pay item is specifically for the work associated with ramp installations including but not limited to curb tapers, depressed ramps with or without unit pavers. No extra payment will be made for site preparation, excavation, special equipment, or cleanup work, but costs for these items shall be included in the pay item for Handicap Ramps.

26. Permeable Concrete Pavers (Item #28) – Payment for "Permeable Concrete Pavers" shall be made at the unit price bid, per square yard, and shall be compensation in full for furnishing all materials (including pavers, stone (ALDOT No. 89, 8, 57, & 2 as required by the plans) concrete band, underdrain, etc.), equipment, tools, labor and incidentals necessary to complete the work as detailed in the plans. Concrete Paver color shall be as directed by the Owner's Representative. A test section shall be constructed and approved before being installed throughout the project. Consistency of joints, color, and finish shall be examined closely.

27. Combination Curb and Gutter (Item #29) – Payment for "Combination Curb & Gutter" shall be made at the unit price bid, per linear feet, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Areas to receive curb and gutter and curb and gutter dimensions are defined in the plans. The final length of curb and gutter installed will determine the total quantity. When transitioning to existing curb and gutter, the Contractor shall taper the required curb and gutter dimensions to the existing curb and gutter section.

28. Standup Curb (Item #30-31) – Payment for "Standup Curb" shall be made at the unit price bid, per linear feet, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Areas to receive standup curb and standup curb dimensions are defined in the plans. The final length of standup curb installed shall determine the total quantity.

29. Valley Gutter (Item #32) – Payment for "Valley Gutter" shall be made at the unit price bid, per linear feet, and shall be compensation in full for furnishing all materials, reinforcement, stone bedding, equipment, tools, labor and incidentals necessary to complete the work. Areas to receive 4' and 6' valley gutter and valley gutter dimensions are defined in the plans. The final length of valley gutter installed shall determine the total quantity.

30. R.C. Pipe and R.C. Arch Pipe (Item #33-39) – Payment for "R. C. Pipe and R.C. Arch Pipe" (Reinforced Concrete Pipe and Arch Pipe) shall be made at the unit price bid, per linear feet of the class and size as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Required storm sewer plugs at the end of stub-outs shall be considered incidental and included in this pay item. The requirements for R.C. Pipe are found in the plans and the material is specified Section 850 of the ALDOT Standard Specifications for Highway Construction, Latest Edition. Only the installed quantity will be paid for. No extra payment will be made for plugs, site preparation, backfill, pipe bedding, trench excavation, removing spoils, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item for R. C. Pipe. Trench details shall be noted for appropriate backfill

and compaction requirements. As referenced above all backfill, bedding, etc. shall be part of this pay item.

31. Type "S" Inlets (1 Wing) (Item #40) – Payment for "Type "S" Inlets" shall be made at the unit price bid, per each of the classification as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The requirements for curb/s-inlets are found in the plans. No extra payment will be made for sumps, BMP Snouts, number of wings, site preparation, backfill, bedding, excavation, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item. The Contractor shall keep the structure top stacked low or make a temporary pipe tie to the structure to maintain site drainage until final finished grade is reached. There shall be no additional pay for use of these structures for temporary drainage. Any temporary connections shall be fully repaired when no longer needed.

32. Concrete Junction Boxes, (Typical) (Item #41) – Payment for "Junction Boxes (Typical)" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work to the full depth as shown on storm sewer profiles. If required, costs for precast manhole access risers shall be included in this pay item. The requirements for Junction Boxes are found on the Construction Plans, ALDOT Special and Standard Highway Drawings (p.507, JB-621-P), and Section 621 of the ALDOT Standard Specifications for Highway Construction, Latest Edition. No extra payment will be made for manhole access risers, manhole ring and cover, site preparation, backfill, bedding, excavation, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item.

33. Grate Inlet (Item #42) – Payment for "Grate Inlet" shall be made at the unit price bid, per each of the classification as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The requirements for grate inlets are found in the plans. No extra payment will be made for site preparation, backfill, bedding, excavation, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item.

34. Concrete Junction Boxes, (Special) (Item #43-48) – Payment for "Junction Boxes (Special)" shall be made at the unit price bid, lump sum for each specific storm structure as shown on the Construction Plans and listed on the Bid Schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work to the full depth as shown on storm sewer profiles. The requirements for Junction Boxes (Special) are include in the Construction Plans. If required, costs for precast manhole access risers shall be included in this pay item. No extra payment will be made for manhole access risers, manhole ring and cover, site preparation, backfill, bedding, excavation, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item.

35. Remove/Raise Junction Box Ring & Cover to Grade (Item #49) – Payment for "Remove/Raise Junction Box Ring & Cover to Grade" shall be made at the unit price bid, per each as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The Contractor shall remove the existing top and shall adjust the top elevation to proposed finished grade. This pay item shall include existing top removal, concrete, reinforcement, ring and covers, etc. necessary to raise the required top. No extra payment will be made for site preparation, backfill, bedding, excavation, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item.

36. Slope Paved Headwall (Item #50) - Payment for "Slope Paved Headwall" shall be made at the unit price bid, per each of the size as shown on the Construction Plans and listed on the bid schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The requirements for Slope Paved Headwall are found on the Construction Plans. No extra payment will be made for site preparation, backfill, bedding, excavation, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item.

37. Tie to Existing Storm Structure (Item #51) – Payment for "Tie to Existing Storm Structure" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, coring of existing structure, labor and incidentals necessary to complete the work. All connections to the existing storm sewer system including connections related to construction phasing shall be included in this pay item. No extra payment will be made for site preparation, backfill, bedding, excavation, removing spoils, inspection, cleaning, and grouting of existing brick culvert, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in this pay item.

38. Ductile Iron Sanitary Sewer Service Lateral (Item #52) – Payment for "DI Sanitary Sewer Service Lateral" shall be made at the unit price bid, per linear feet of the size and materials as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The requirements for the DI Sewer Laterals are found in the plans and technical specifications. Only the installed quantity will be paid for. No extra payment will be made for existing lateral removal, site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, clean-outs or other required fittings, special equipment or cleanup work, but costs for these items shall be included in the pay item for DI Sewer Laterals. All laterals over 100 feet in length are required to have a cleanout placed at a maximum interval of 100 feet. Payment for cleanouts shall be considered a subsidiary obligation of this pay item. Trench details shall be noted for appropriate backfill and compaction requirements. As referenced above all backfill, bedding, etc. shall be part of this pay item.

39. Ductile Iron Sanitary Sewer Main (Item #53-54) – Payment for "DI Sanitary Sewer Main" shall be made at the unit price bid, per linear feet of the material and diameter at all depths or at depth specifically as listed on the bid schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The requirements for DI Sanitary Sewer Pipe are found on the Construction Plans and technical specifications. Only the installed quantity will be paid for. No extra payment will be made for bypass pumping, site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, special equipment or cleanup work, but costs for these items shall be included in the pay item. Trench details shall be noted for appropriate backfill and compaction requirements. As referenced above all backfill, bedding, etc. shall be part of this pay item.

40. Standard Precast Concrete Manholes (Item #55) - Payment for "Standard Precast Concrete Manholes" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The requirements for Standard Manholes are found on the Construction Plans. No extra payment will be made for ring and cover, bypass pumping, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item for Standard Manholes.

41. Standard Precast Doghouse Manhole (Item #56) - Payment for "Standard Precast Doghouse Manhole" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The requirements for Doghouse Manholes are found on the Construction Plans. No extra payment will be made for ring and cover, bypass pumping, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in the pay item for Doghouse Manholes.

42. Tie to Existing Sewer Lateral (Item #57) – Payment for "Tie to Existing Sewer Lateral" shall be made at the unit price bid, per each all sizes, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work for connection of the existing sewer lateral to the new sewer lateral and main. Only the installed quantity will be paid for. No extra payment will be made for site preparation, backfill, bedding, excavation, removing spoils, inspection, cleaning, grouting, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in this pay item.

43. Sanitary Sewer Bypass Pumping (Item #58) – Payment for "Sanitary Sewer Bypass Pumping" shall be made at the unit price bid, per lump sum, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to provide sewer bypass pumping as necessary during construction and required testing/inspection. This pay item shall include all needed setups and devices including but not limited to the following: a wetwell, a primary and a redundant pump, plug valves, check valves, piping, fittings, valve pit, controls, fuel, generator, excavation, backfill, and any miscellaneous appurtenances and any other items that may be required to operate the Sanitary Sewer Bypass Pumping. No additional payment will be made for multiple setups. The sanitary sewer system in this area has constant flow and bypass pumping will be required to complete all of the improvements. The Contractor shall be responsible for planning his bypass pumping schedule to allow the required work to be completed. Field visit and investigation prior to bidding is recommended.

44. Post Construction Camera Inspection (Item #59) – Payment for "Post Construction Camera Inspection" shall be made at the unit price bid, per linear feet, and shall be compensation in full for furnishing all materials, equipment, bypass pumping, tools, labor and incidentals necessary to complete the work. The Contractor shall supply to the Owner's Representative two (2) copies of the post construction video on DVD or Thumb Drive and a bound written report of total linear feet TV'd. Only the lengths TV'd will be paid for.

45. Water Service Line (Item #60) – Payment for "Water Service Line" shall be made at the unit price bid, per linear feet of the diameter and material listed on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Only the installed quantity will be paid for. No extra payment will be made for site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, special equipment or cleanup work, and required testing, but costs for these items shall be included in this pay item.

46. Water Main (Item #61-65) – Payment for "Water Main" shall be made at the unit price bid, per linear feet of the diameter and material listed on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Only the installed quantity will be paid for. No extra payment will be made for site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, special equipment or cleanup work, and required testing, but costs for these items shall be included in this pay item. Trench details shall be noted for appropriate backfill and compaction requirements. As referenced above all backfill, bedding, etc. shall be part of this pay item.

47. Hot Tap w/Tapping Valve and Sleeve (Item #66) – Payment for "Hot Tap w/Tapping Valve and Sleeve" shall be made at the unit price bid, per each of the diameter listed on the bid schedule and shown on the Construction Plans, and shall be compensation in full for furnishing all equipment, tools, labor and incidentals necessary to complete the work. Only the installed quantity will be paid for. No extra payment will be made for site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, valve boxes, special equipment or cleanup work, and required testing, but costs for these items shall be included in this pay item.

48. Gate Valves (Item #67-70) – Payment for "Gate Valves" shall be made at the unit price bid, per each of the size listed on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, valve boxes, tools, labor and incidentals necessary to complete the work. Only the installed quantity will be paid for.

49. D.I.M.J. Water Main Plug (Item #71-72) – Payment for "D.I.M.J. Water Main Plug" shall be made at the unit price bid, per each of the size as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. No extra payment will be made for site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, threaded connections (if required), special equipment or cleanup work, and required testing, but costs for these items shall be included in this pay item.

50. Remove/Reset Water Meters (Item #73) – Payment for "Remove/Reset Water Meters" shall be made at the unit price bid, per each as shown on the Construction Plans and at the size determined in the field (5/8" – 2" Meters), and shall be compensation in full for furnishing all equipment, tools, labor and incidentals necessary to complete the work. Only the installed quantity will be paid for. No extra payment will be made for disconnect/connections, site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, special equipment or cleanup work, and required testing, but costs for these items shall be included in this pay item.

51. Meter Assembly (Domestic and Irrigation) (Item #74-75) – Payment for "Meter Assembly" shall be made at the unit price bid, per each of the size listed on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, meter boxes, meter vaults, backflow preventer, pressure reducing valve, valve boxes, tools, labor and incidentals necessary to complete the work. Only the installed quantity shall be paid for.

52. 2" Flush Assembly (Item #76) – Payment for "2" Flush Assembly" shall be made at the unit price bid, per each of the size listed on the Construction Plans, and shall be compensation in full for furnishing all equipment and installation services. Only the installed quantity shall be paid for.

53. Tie to Existing Watermain (Item #77) – Payment for "Tie to Existing Watermain" shall be made at the unit price bid, per each all sizes, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work for connection of the proposed watermain to the existing water main and valves. Only the installed quantity will be paid for. No extra payment will be made for site preparation, backfill, bedding, excavation, removing spoils, inspection, cleaning, grouting, required geotextiles, special equipment or cleanup work, but costs for these items shall be included in this pay item.

54. Cut/Cap Existing Water Main (Item #78) – Payment for "Cut/Cap Existing Water Main" shall be made at the unit price bid, per each of the size as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. No extra payment will be made for site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, special equipment or cleanup work, and required testing, but costs for these items shall be included in this pay item.

55. Direct Tap to Water Main (Item #79) – Payment for "Direct Tap to Water Main" shall be made at the unit price bid, per each of the diameter listed on the bid schedule and shown on the Construction Plans, and shall be compensation in full for furnishing all equipment, tools, labor and incidentals necessary to complete the work. Only the installed quantity will be paid for. No extra payment will be made for asphalt removal and temporary patching, site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, valve, valve box, concrete pad, special equipment or cleanup work, and required testing, but costs for these items shall be included in this pay item.

56. Fire Hydrant Assembly (Item #80) – Payment for "Fire Hydrant Assembly" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Each assembly shall include the hydrant, associated gate valve and valve box, M.J. locking fire hydrant tee, 6" M.J. anchoring coupling, concrete, excavation, drainage pit, labor and equipment for the proper installation, testing and other miscellaneous requirements of fire hydrants according to these specifications from the gate valve to the hydrant. If the distance from the centerline of the main to the centerline of the hydrant is greater than 20 feet, the additional length greater than 20 feet shall be paid per linear foot as per the bid schedule.

57. Pressure Testing and Disinfection (Item #81) – Payment for "Pressure Testing and Disinfection" shall be made at the unit price bid, per lump sum for the system as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. No extra payment will be made for site preparation, special equipment, and required testing, but costs for these items shall be included in this pay item. Testing shall occur until a passing test is achieved.

58. PVC Utility Conduits (Item #82-93) – Payment for "PVC Utility Conduits" shall be made at the unit price bid, per lump sum of the diameter and material listed on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. As conduit is installed of each diameter and material, the percent complete at the end of each pay period shall be paid for respective to each lump sum bid item. Final payment shall only be made after all plan requirements have been met for each individual pay item. All necessary conduits are shown on the plans and shall be installed in the locations shown on the plans. Any deviation from the installed locations shown on the plans without prior approval from the Owner's Representative shall result in the removal and reinstallation of the conduit in the shown location. No extra payment will be made for boring methods, site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, clean-outs or other required fittings, turnups, concrete, special equipment or cleanup work, but costs for these items shall be included in this pay item. Trench details shall be noted for appropriate backfill and compaction requirements. All conduits/duct banks shall be thoroughly cleaned after installation and capped on all open ends to prevent water or debris from reentering the cleaned conduit. End caps shall be PVC. Taped end openings shall not be accepted. Each conduit shall have a pull string installed for raceway installation by private utility companies or the City of Tuscaloosa.

59. APCO Utility Structures (Item #94-96) – Payment for "APCO Utility Structures" shall be made as noted in the Bid Schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The utility structures shall be installed per the plan detail and APCO requirements. Installation relative to finished grade (top of landscape (sod, mulch bed, etc.)) is critical. The Contractor shall verify finished grades for the area receiving these structures and ensure they are set properly. Sometimes during the course of construction previously installed structures may settle. At the end of the project, all utility structures shall be installed flush with finished grade, no exceptions. Any items that were not installed at correct elevation or settled shall be removed and reset. This could prove difficult after conduits are installed in the structures, so to avoid a lot of rework proper installation should be achieved initially. Some structures are to be provided by APCO and installed only and others, the material and installation should be included by the Contractor. In both cases, the plans detail the required materials and material submittals shall be provided on all materials being installed that are not directly provided by the private utility companies.

60. TDOT Utility Structures (Item #97-98) – Payment for "TDOT Utility Structures" shall be made as noted in the Bid Schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The utility structures shall be installed per the plan detail and TDOT requirements. Installation relative to finished grade (top of landscape (sod, mulch bed, etc.)) is critical. The Contractor shall verify finished grades for the area receiving these structures and ensure they are set properly. Sometimes during the course of construction previously installed

structures may settle. At the end of the project, all utility structures shall be installed flush with finished grade, no exceptions. Any items that were not installed at correct elevation or settled shall be removed and reset. This could prove difficult after conduits are installed in the structures, so to avoid a lot of rework proper installation should be achieved initially. The plans detail the required materials and material submittals shall be provided on all materials being installed.

61. Tie to Existing Conduits (Item #99) – Payment for "Tie to Existing Conduits" shall be made as noted in the Bid Schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The Contractor shall locate, excavate, and connect all required conduits for the project to the buried conduits from Phase IA (AT&T, TDOTL, TDOTF). The Contractor shall use extreme caution, so as not to damage the conduits or get debris in them when making the connection. A pull string and cleaning/flushing shall be required the continuous length of the conduit after connection is made. This may require cleaning/flushing and blowing pull string starting from areas on Phase IA ending at end openings on Phase IB.

62. Tie to Existing Residential Power Panel (Service Conversion) (Item #100) – Payment for "Tie to Existing Residential Power Panel (Service Conversion)" shall be made as noted in the Bid Schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The Contractor shall coordinate with APCO to convert the existing meter connection from an overhead service to an underground service. The Contractor shall be required to meet all electrical codes in converting the above ground meter connection to a below ground. The overhead mast shall be removed and any holes properly sealed per electrical codes. After the mast is removed from the side of the house, the side of the house may require painting to dress the area. Any painting, wood filling, etc. shall be considered a subsidiary obligation to this pay item. Paint shall be matched to the existing paint colors. The Contractor shall provide a stamped drawing by a professional engineer licensed in the State of Alabama for the electrical detail proposed for all improvements associated with the conversion. This drawing shall be submitted with the material submittal for each residence.

63. Erosion Control Management and Maintenance (Item #101) – Payment for "Erosion Control Management and Maintenance" shall be made at the unit price bid, per lump sum, and shall be compensation in full for furnishing all materials, equipment, tools, *permit fees*, labor and incidentals necessary to complete the work. Erosion control measures are called out and detailed in the plans and shall require weekly if not daily maintenance. The erosion control plans and/or details shown on the Construction Plans are suggested minimums to complete and maintain the work. More erosion control measures may be required to maintain compliance with the NPDES permit. Any required erosion control measures, stated or unstated, are the responsibility of the Contractor. Erosion control (i.e. silt fence, sediment logs, dome covers, riprap, etc.) is to be installed as required during construction and as noted on the plans. Due to phasing of the project and varying sequencing of construction proposed by the Contractor during construction, some of these items shown on the plans may not be needed or may change based on the Contractor's means and methods. Ultimately; however, the Contractor is solely responsible for erosion from the project site as required by the CBMPP as part of the NPDES Permit. This pay item includes temporary seeding and mulching for the site at all times to prevent erosion during construction. Due to construction phasing and rain events, the site may have to be seeded and mulched numerous times. A portion of the lump sum price, directly proportional to percent complete, will be available for payment at each pay request; the total amount for "Erosion Control Management and Maintenance" will not be paid until the project is 100% complete. Percent complete for this pay item will be determined based upon percentage of the entire project schedule complete at the time of pay request, for example if the entire project schedule is 7 months long, then after 1 month, payment would be made on approximately 14% (1/7) of this lump sum fee. The NPDES Permit shall be secured by the Contractor. The Contractor shall be fully responsible for managing and maintaining all erosion measures installed during the construction of the project, including all phasing, earthwork management, etc. There shall be no additional payment for this work.

64. Traffic Control and Construction Signs (Item #102-103) – Payment for "Traffic Control and Construction Signs" shall be made at the unit price bid, per lump sum, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to provide traffic control in accordance to the latest addition of the MUTCD. Temporary striping and regulatory speed signs, stop signs, yield signs, etc. shall be installed and maintained as necessary as shown on the Construction Plans and shall be compensated for by these pay items unless individual bid items are provided. A portion of the lump sum price, directly proportional to percent completion, will be available for payment at each pay request; the total amount for "Traffic Control" will not be paid until the project is 100% complete. This pay item shall include all needed devices included, but not limited to the following: drums, cones, flagging, barricades, flaggers, and any other items that may be required to construct the project. A portion of the lump sum price, as purchases occur, will be available for payment each pay request for "Construction Signs" as much of the cost for these items will occur early in the project and continue throughout the different traffic control phases.

65. Permanent Signing and Striping (Item #104-114) – Payment for "Permanent Signing and Striping" shall be made at the unit price bid as shown on the Bid Schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Private residential and business signs shall be removed/reset, if any, as affected by the work. This work is considered a subsidiary obligation of this pay item. Signing, Striping, and Markings are shown on the Construction Plans and listed in the Bid Schedule. All signs, striping, and markings must comply with guidelines set in the latest edition of MUTCD and shall conform to ALDOT specifications. Any temporary striping required due to phased construction shall be a subsidiary obligation of this task.

66. ALDOT Stone (Item #115-117) – Payment for "ALDOT Stone" shall be made at the unit price bid, per tons of the gradation listed in the Bid Schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Areas to receive ALDOT Stone shall be at the discretion and under the direction of the Owner's Representative and shall be approved prior to placement. The Contractor shall spread this material out in the locations designated to the thickness requested. At the end of the project the Contractor shall remove all of the stone. Any stone required for drive, sidewalk, etc. access and erosion control throughout the project area shall not be paid for as part of this pay item. The Contractor shall note that upon completion of the project these pay items may not even have been used.

67. Utility Trench Foundation Material (Item #118) – Payment for "Utility Trench Foundation Material" shall be made at the unit price bid, per cubic yard, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Areas to receive Trench Foundation Material shall be at the discretion and under the direction of the Owner's Representatives and shall be approved prior to placement. This pay item is not intended for any temporary stone for site access. It is intended only for the foundation of utility improvements. As part of this pay item, the Contractor shall be paid to remove any unsuitable material found below the required stone bedding of the utility improvement, disposal of the unsuitable material, stone replacement material (stone gradation as determined by the Owner's Representative) to be installed in-place of the unsuitable material removed, dewatering, etc. Payable quantities shall be measured in-place volumes as measured by the Owner's Representative. Any quantities not measured shall not be paid for. Contractor must provide written notice, 48 hours prior to any quantity measurements.

68. Geotextile Stabilization Mat (Item #119) – Payment for "Geotextile Stabilization Mat" shall be made at the unit price bid, per square yard, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Areas to receive geotextile stabilization mat shall be at the discretion and under the direction of the Engineer and shall be approved prior to placement. Any geotextile stabilization mat required for site access throughout the project area will not be paid for as part of this pay item. Geotextile stabilization mat shall conform to the requirements of Mirafi HP570 or approved equal. No quantities for overlapping (as recommended by manufactures) will be paid for.

69. 6" Underdrain (As directed by the Owner's Representative) (Item #120) – Payment for "6" Underdrain" shall be made at the unit price bid, per linear foot, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The requirements for 6" Underdrain are found on the Construction Plans. Only the installed quantity will be paid for. No payment will be made for any quantity installed without the direction of the Owner's Representative. This bid item as referenced above shall only be used as directed.

70. Removable Bollard (Item #121) - Payment for "Removable Bollard" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Removable Bollard requirements are outlined in the plans.

71. Metal Bench (Item #122) - Payment for "Metal Bench" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Metal Bench requirements are outlined in the construction documents. This pay item will include all site preparation, concrete pavement, reinforcement, stone base, installation, painting, etc. for the full completion of metal bench construction and installation.

72. Trash Receptacle (Item #123) - Payment for "Trash Receptacle" shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Trash Receptacle requirements are outlined in the construction documents. This pay item will include all site preparation, concrete pavement, reinforcement, stone base, installation, painting, etc. for the full completion of trash receptacle construction and installation.

73. Mailbox Remove/Reset (Item #124) – Payment for "Mailbox Remove/Reset" shall be made shall be made at the unit price bid, per each, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Mailbox shall be reset at the correct height and distance behind the back of curb to meet all U.S. Postal Service requirements for mail delivery service. Mail delivery service shall be maintained to customers at all times. Any mailbox reset which does not satisfy the above noted requirements will be removed and reset, until correct, at no additional cost to the project.

74. Landscaping and Irrigation Improvements (Item #125 – #141) – Payment for "Landscaping and Irrigation Improvements" shall be made at the unit price bid as shown on the Bid Schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Areas to receive landscaping are noted on the landscaping plans and specifications in the Construction Documents. Unit prices for the landscaping and irrigation systems have been listed on the bid form. The Landscape Architect shall verify all pay requests during construction and observe installation. Irrigation is being installed throughout the project area as defined on the irrigation plans. The Contractor shall be responsible for the maintenance of all plant materials and the irrigation systems until final approval of the project.

75. Electrical Improvements (Item #142) – Payment for "Electrical Improvements" shall be made at the unit price bid, per lump sum as shown on the bid schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. This pay item shall compensate the Contractor for providing a complete and operational electrical system as defined on the Electrical Plans and Specifications. Some electrical system items such as conduits, lighting controllers, and light poles have been listed as separate individual pay items. If a specific pay item is NOT provided for an electrical requirement/item necessary to complete the system, then it shall be included in this lump sum pay item for Electrical Improvements. No extra payment will be made for site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, special equipment or cleanup work, and required testing.

76. Lighting Controller (Item #143)
Payment for "Lighting Controller" shall be made at the unit price bid, per each as shown on the bid schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. All controller requirements are defined on the Electrical Plans and Specifications. No extra payment will be made for site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, special equipment or cleanup work, and required testing.

77. Light Fixtures (Item #144-145)
Payment for "Light Fixtures" shall be made at the unit price bid, per each as shown on the bid schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. The City of Tuscaloosa shall provide all materials associated with the light fixture including but not limited to the light pole, mast arms, lights, etc. The Contractor shall provide all materials necessary to install the light fixture concrete anchor bases, conduit turnups, cast anchor bolts in the base, etc. Coordination shall be required between the Contractor and the City/Manufacturer on obtaining the correct anchor bolts to install in the anchor bases. Once the light fixture units arrive at the TDOT material yard, the Contractor shall pickup all of the materials, deliver to the project site, completely assemble, and install. As part of the Electrical Improvements bid item, the Contractor shall fully wire the light fixture and tie it to the electrical system. The Contractor shall pay particular attention to where specific fixtures are to be installed. Some fixtures shall have multiple ,mast arms, camera equipment, control panels, etc. These items are to be oriented in certain configuration as well. Any fixtures installed in the wrong location or oriented improperly shall be removed and replaced. The Contractor shall reference the Electrical and Civil Plans and Specifications closely for the above referenced information and anchor base requirements and installation requirements. The elevation of the top of light fixture bases is critical. The Contractor shall make sure he sets the top of bases at the proper height above proposed finished ground (top of landscape (sod, mulch bed, etc.)). Incorrect top of base elevations shall be corrected at no additional cost to the project. This could require removal of the light pole base. The Contractor shall also note that the anchor base minimum depth requirements are based on undisturbed soils. In some locations due to other required improvements, the existing earthen material may have been disturbed negating the soil bearing pressure of the soil. In these locations, the concrete anchor base shall be installed deeper to allow the base to be installed in undisturbed existing soils which will provide the necessary soil bearing pressures for the anchors

78. PVC Sanitary Sewer Service Lateral (Item #A1) – Payment for "PVC Sanitary Sewer Service Lateral" shall be made at the unit price bid, per linear feet of the size and materials as shown on the Construction Plans, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. This pay item is listed on the bid schedule as part of Alternate 1 and the cost for this item shall be noted as being either the additive or deductive cost difference from the base bid unit price noted on the bid schedule for "DI Sanitary Sewer Service Lateral", Pay Item #52. While the base bid reflects Ductile Iron pipe, the owner reserves the right to have a combination of both Ductile Iron and PVC Sanitary Sewer. The requirements for the PVC Sewer Laterals are found in the plans and technical specifications. Only the installed quantity will be paid for. No extra payment will be made for existing lateral removal, site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, clean-outs or other required fittings, special equipment or cleanup work, but costs for these items shall be included in the pay item for PVC Sewer Laterals. All laterals over 100 feet in length are required to have a cleanout placed at a maximum interval of 100 feet. Payment for cleanouts shall be considered a subsidiary obligation of this pay item. Trench details shall be noted for appropriate backfill and compaction requirements. As referenced above all backfill, bedding, etc. shall be part of this pay item.

79. PVC Sanitary Sewer Main (Item #A2) – Payment for "PVC Sanitary Sewer Main" shall be made at the unit price bid, per linear feet of the material and diameter at all depths or at depth specifically as listed on the bid schedule, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. This pay item is listed on the bid schedule as part of Alternate 1 and the cost for this item shall be noted as being either the additive or deductive cost difference from the base bid unit price noted on the bid schedule for "PVC Sanitary Sewer Main", Pay Item #53. While the base bid reflects Ductile Iron pipe, the owner reserves the right to have a combination of both Ductile Iron and PVC Sanitary Sewer. The requirements for PVC Sanitary Sewer Pipe are found on the Construction Plans and technical specifications. Only the installed quantity will be paid for. No extra payment will be made for bypass pumping, site preparation, backfill, pipe bedding, trench excavation (including backfill), required geotextiles, required fittings, special equipment or cleanup work, but costs for these items shall be included in the pay item. Trench details shall be noted for appropriate backfill and compaction requirements. As referenced above all backfill, bedding, etc. shall be part of this pay item.

END OF SECTION 01800

SECTION 01801 - CLEANING AND MAINTENANCE

PART 1 - GENERAL

1.1 Work Included

A. This section covers the work necessary for cleaning during construction and final cleaning on completion of the work.

B. At all times maintain areas covered by the Contract and adjacent public properties free from accumulations of waste, debris, and rubbish caused by construction operations.

C. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws. Do not burn or bury rubbish and waste materials on project site. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains. Do not dispose of wastes into streams or waterways.

D. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

1.2 Cleaning During Construction

A. During execution of work, clean site and adjacent public properties and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.

B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish.

D. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from exposed and semi-exposed surfaces.

E. Repair, patch, and touch up marred surfaces to specified finish to match adjacent surfaces.

1.3 Final Cleaning

A. At the completion of work on all contracts and prior to final inspection, the Contractor shall clean the entire project of all construction debris, materials, etc., from the work area and any other areas affected by the work. The areas shall be cleared and restored to as good or better than original condition.

B. Should the Contractor not remove rubbish or debris from the site as specified above, the Owner reserves the right to have the cleaning done at the expense of the Contractor.

C. Repair, patch, and touch-up marred surfaces to specified finish, to match adjacent surfaces.

D. Broom clean paved surfaces; rake clean other surfaces of grounds.

E. Power-wash all paved surfaces to remove stains and tire marks.

G. Remove from the Owner's property all temporary structures and all materials, equipment, and appurtenances not required as a part of, or appurtenant to, the completed work. See Section 01500 TEMPORARY FACILITIES AND CONTROLS.

F. The Owner will assume responsibility for cleaning as of the date of Substantial Completion of the project or portions thereof, and after the Contractor has satisfactorily completed final cleaning of the project or the same portions thereof.

1.4 Payment

A. No separate payment for maintenance and cleaning will be made.

END OF SECTION 01801

SECTION 01810 – CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 Work Included

A. This section of specifications outlines the general procedures to be followed for the closeout of all contracts.

1.2 Substantial Completion

A. The substantial completion date for each portion of work shall be as established by the General Conditions and the Contract. The Contractor should be aware that the Owner may desire to place portions of the work into service prior to completion of the contract. The Contractor should refer to the Contract Documents for phases of work to be placed in service.

1.3 Final Inspection

A. Upon final cleaning and written notice from the Contractor that the work is completed, the Engineer will make a preliminary inspection with the Owner and Contractor present. Upon completion of the preliminary inspection, the Engineer will notify in writing any defective or incomplete work revealed by the inspection.

B. Upon receiving notification from the Engineer, the Contractor shall immediately proceed to remedy all punch list items to the satisfaction of the Owner.

C. The Contractor shall inform the Engineer in writing that he has completed or corrected all punch list items, and desires final inspection. The Engineer, in the presence of the Owner and Contractor, shall make a final inspection of the project.

D. Should the Engineer find all work to be satisfactory, the Contractor may make application for final payment in accordance with the General Conditions of the contract. Should the Engineer find deficiencies in the work, the Engineer will inform the Contractor and deny any request for final payment until such deficiencies are corrected to the satisfaction of the Owner and Engineer.

1.4 Final Submittals

A. The contract shall not be finalized and final payment shall be withheld until all submittals, shop drawings, as-built drawings, keys, etc. are submitted to the Engineer. All guarantees, bonds, affidavits, releases shall be finalized and satisfactorily submitted to the Engineer before final payment is made. Final payment shall be withheld until satisfactory evidence of release of all liens and claims against the contractor have been submitted to the Engineer.

END OF SECTION 01810

SECTION 02060 - DEMOLITION

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 Summary

A. This Section includes the following:

1. Demolition and removal of buildings.
2. Demolition and removal of structures.
3. Demolition and removal of site improvements, including curb and gutter, drives, etc.
4. Disconnecting, capping or sealing, and abandoning site utilities in place.
5. Disconnecting, capping or sealing, and removing site utilities.

1.3 Definitions

A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.

B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.

C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in locations indicated.

D. Existing to Remain: Protect construction indicated to remain against damage and soiling during demolition. When permitted by the Engineer, items may be removed to a suitable, protected storage location during demolition and then cleaned and reinstalled in their original locations.

1.4 Materials Ownership

A. Except for items or materials indicated to be reused, salvaged, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

B. Historical items indicated remain the Owner's property. Carefully remove and salvage each item in a manner to prevent damage and deliver promptly to the Owner.

C. Historical items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to the Owner, which may be encountered during demolition, remain the Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the Owner.

1. Cooperate with Owner's archaeologist or historical adviser.

1.5 Submittals

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections, for information only, unless otherwise indicated.

B. Proposed dust-control measures.

C. Proposed noise-control measures.

D. Schedule of demolition activities indicating the following:

1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
2. Dates for shutoff, capping, and continuation of utility services.

E. Inventory of items to be removed and salvaged.

F. Inventory of items to be removed by Owner.

G. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by demolition operations.

H. Record drawings at Project closeout according to Division 1 Section "Contract Closeout."

1. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

I. Landfill records for record purposes indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 Quality Assurance

A. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed demolition Work similar to that indicated for this Project.

B. Regulatory Requirements: Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Predemolition Conference: Conduct conference at Project site to comply with preinstallation conference requirements of Division 1 Section "Project Meetings."

1.7 Project Conditions

A. Buildings to be demolished will be vacated and their use discontinued before start of Work.

B. Owner assumes no responsibility for actual condition of buildings to be demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Asbestos: Evaluation of the properties and determination if asbestos is present will be coordinated by the Owner. Should asbestos be found, an allowance has been set up in the bid schedule for use for asbestos abatement. It will be the Contractor's responsibility to secure pricing from properly licensed personnel to perform removal and disposal of asbestos material. Prior to work beginning, the pricing shall be submitted to the Owner for their review and approval. It shall be the Contractor's responsibility to coordinate all pricing, removal of material, and payment to their subcontractor for this work. The Contractor shall submit to the Owner's Representative a certified letter stating that all asbestos has been removed and provide tickets to the disposal location.

1. Asbestos will be removed by Contractor before start of Work.

D. Storage or sale of removed items or materials on-site will not be permitted.

1.8 Scheduling

A. Arrange demolition schedule so as not to interfere with Owner's on-site operations. No building structure shall be removed without final direction from Owner.

PART 2 - PRODUCTS

2.1 Soil Materials

A. Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."

1. Obtain approved borrow soil materials off-site when sufficient satisfactory soil materials are not available on-site. It is the Contractor's responsibility to coordinate pick-up of soil samples by Owner's representative of material to be used as borrow material for analysis and PD establishment. The Contractor will not be allowed to begin fill operations until this information is established for compaction testing.

PART 3 - EXECUTION

3.1 Examination

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. Survey the condition of the building to determine whether removing any element might result in a structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during demolition.

E. Perform surveys as the Work progresses to detect hazards resulting from demolition activities.

3.2 Utility Services

A. Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.

B. The Contractor will arrange for disconnecting and sealing indicated utilities serving structures to be demolished before start of demolition work, when requested by Contractor.

C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving structures to be demolished.

1. Arrange to shut off indicated utilities with utility companies.

3.3 Preparation

A. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with demolition operations.

B. Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during demolition operations. **(N/A)**

C. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around demolition area.

1. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
2. Protect existing site improvements, appurtenances, and landscaping to remain.
3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.

E. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of existing retaining walls, buildings, etc. to remain.

1. Strengthen or add new supports when required during progress of demolition.

3.4 Explosives

A. Explosives: Use of explosives will not be permitted.

B. Explosives: Do not bring explosives to the site or use explosives without written consent of Owner and authorities having jurisdiction. Such written consent will not relieve Contractor of total responsibility for injury to people or for damage to property due to blasting operations. Perform required blasting in compliance with governing regulations. **(NA)**

3.5 Pollution Controls

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not create hazardous or objectionable conditions, such as ice, flooding, and pollution, when using water.

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.

C. Clean adjacent buildings and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before start of demolition.

3.6 Demolition

A. Building Demolition: Demolish buildings completely and remove from the site. Use methods required to complete Work within limitations of governing regulations and as follows:

1. Locate demolition equipment throughout the building and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
2. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
3. Small buildings may be removed intact when permitted by Engineer and approved by

authorities having jurisdiction.

4. Demolish concrete and masonry in small sections.
5. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
6. Break up and remove concrete slabs on grade, unless otherwise shown to remain.
7. Remove air-conditioning equipment without releasing refrigerants.

B. Below-Grade Construction: Demolish foundation walls and other below-grade construction, as follows:

1. Remove below-grade construction, including foundation walls and footings, to at least 12 inches below grade.
2. Remove below-grade construction, including foundation walls and footings, to the depths indicated. **(N/A)**
3. Completely remove below-grade construction, including foundation walls and footings, storm drain, sanitary sewer, water distribution/fire protection, etc.
4. Break up and remove below-grade concrete slabs, unless indicated to remain.
5. Break up below-grade concrete slabs into sections no larger than 24 inches square and leave in place.
6. Remove old debris such as trolley railings and ties, abandoned tanks, vaults, basements, etc.

C. Filling Below-Grade Areas: Completely fill below-grade areas and voids resulting from demolition of buildings, pavements, utilities, basements, coal shutes, etc., with soil materials according to requirements specified in Division 2 Section "Earthwork", and/or stone as shown in the Construction Plans.

D. Damages: Promptly repair damages to adjacent facilities caused by demolition operations.

3.7 Disposal Of Demolished Materials

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 02060

SECTION 02100 - SITE PREPARATION, GENERAL

PART 1 - GENERAL

1.1 Work Included:

A. Prior to starting construction operations, the Contractor shall remove all vegetable growth, debris, and other objectionable matter standing or lying on the surface within the limits of the areas to be excavated or filled, and shall demolish and remove there from such buildings and other structures as are specifically designated on the plans for removal.

B. Any damage to natural terrain or to vegetation or objects designated to remain shall be repaired, replaced, or otherwise compensated for, as determined by the Engineer, at the Contractor's expense.

C. Contractor shall remove all trees from the construction area except those trees that are designated in the field by the Owner to remain intact. This shall include complete stump removal to avoid future settlement. The Contractor may backfill with soil materials according to requirements specified in Division 2 Section "Earthwork" or with stone. Backfill of holes created by stump removal is considered a subsidiary obligation and there shall be no additional pay for this work.

END OF SECTION 02100

SECTION 02102 - EXISTING UTILITIES

PART 1 - GENERAL

1.1 Existing Utilities:

A. The Contractor shall be responsible for and shall protect existing utilities. Where existing utilities are interrupted, damaged, or taken off line for connection to other facilities, or are taken out of service for any reason associated with the work, the Contractor shall work expeditiously and continuously (including through meals and around the clock) to return the utility to service as soon as possible. Where the Contractor plans to remove existing utilities from service with the prior expressed approval of the utility and the Owner, the Contractor shall coordinate with persons, businesses, or parties that may be affected by the temporary loss of service.

1. As shown in the Construction Plans, the Contractor shall install all conduits, equipment pads, pedestals, etc., for each private utility company. The installation and materials shall be approved and to the satisfaction of each private utility company representative before the underground conduit system shall be turned over to each private utility company to install below ground utilities. The Contractor shall not relinquish ownership of the conduit system until all below ground utilities are pulled/installed and the systems are energized/activated, allowing the retirement of above ground utilities.

2. All coordination with private utility companies is the sole responsibility of the Contractor. Proper scheduling of private utility company crews to install new services and retire existing services shall rest on the Contractor's timely, advance coordination of the overall project schedule with each private utility company. There shall be no additional contract time granted for the Contractor's failure to coordinate in a timely fashion with the private utility companies.

B. Any adjustments (temporary or otherwise), protection, support, removal, relocation, or repairs, etc. to utilities shall be performed by the utility (at the expense of the Contractor). Alternatively, if the utility desires, such activity shall be performed by the Contractor at his expense in a manner meeting the approval of the utility.

END OF SECTION 02102

SECTION 02102 - EXISTING UTILITIES

PART 1 - GENERAL

1.1 Existing Utilities

A. The Contractor shall be responsible for and shall protect existing utilities. Where existing utilities are inadequate, damaged, or taken off line by connection to other facilities, or are taken out of service for any reason caused by this work, the Contractor shall immediately and diligently proceed with the repair and return the utility to service as soon as possible. Where the Contractor's plans to remove existing utilities from service will impose excessive downtime of the utility, including Owner's Contractor, the Contractor shall coordinate with Owner's Representative to provide "hot-taps" to allow for temporary loss of service.

1. Prior to the Construction Plans, the Contractor shall research all existing equipment prints, pertinent data for each private utility company. The installation and removal shall be performed in accordance to the manufacturer of each private utility company requirements before the underground utility system shall be moved over to each private utility company to maintain uninterrupted service. The Contractor shall be moved within vicinity of the overall system until all below ground utilities are properly installed and the systems are protected and moved allowing the safe operation of the ground utilities.

2. All coordination with private utility companies is the sole responsibility of the Contractor. Prior to disturbing of private utility companies to install new services and retire existing services shall test on the Construction to verify accurate operation of the overall project affected with each private utility company. There shall be no additional compensation granted for the Contractors failure to coordinate in a timely fashion with the private utility companies.

B. Any underground improvements or obstructions, whether or not shown on the plans, encountered in the utility shall be preserved by the Utility for the existence of the Contractor. Alternatively, if the utility decides, such activity shall be performed by the Contractor at the expense of a mutually agreed upon approval of the utility.

END OF SECTION 02102

SECTION 02110 - CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 Work Included:

A. The Engineer will designate the areas to be cleared and grubbed and will indicate all trees, shrubs, plants, and other items to remain. Any damage to natural terrain or to vegetation or objects designated to remain shall be repaired, replaced, or otherwise compensated for as determined by the Engineer at the expense of the Contractor.

B. Where required, the Contractor shall post with the Owner any performance bond or liability insurance which may be required to guarantee the satisfactory replacement or repair of materials, structures or landscaping within the work area.

C. Ornamental trees, cultivated shrubs and similar growths which occupy streets, alleys, or other public rights-of-way or easements but which lie outside the limits of excavation shall remain undisturbed and shall be carefully preserved and protected by the Contractor throughout all stages of the construction work.

D. All cut or scarred surfaces of trees or shrubs shall be treated with an asphaltum base paint especially prepared for tree surgery.

E. The Contractor shall not enter upon private property for any purpose without first obtaining permission from its Owner and he shall be responsible for the preservation of, and shall use every precaution necessary to prevent damage to all trees, shrubbery, fences, culverts, bridges, pavement, driveways, sidewalks, etc., and to all water, sewer, gas, telephone, and electric lines thereof, and to all other public or private property along or adjacent to the work.

1.2 Clearing:

A. The area within the construction limits shall be cleared of all surface objects, and all trees, stumps, roots and other objectionable obstructions resting on or protruding to the surface of the original ground except those designated to be retained.

1.3 Grubbing:

A. All areas within the construction limits shall be grubbed of all objectionable matter on or projecting to the ground surface.

B. All fill areas shall be grubbed to a depth of at least one foot below the natural ground.

1.4 Clearing and Grubbing Limits:

A. Clear and grub within grading limits shown by sections and new contours shown on the drawings.

B. Clear and grub within the limits of building and paving lines and to a point five (5) feet beyond building lines.

C. Clearing and grubbing limits for utilities, where not specifically indicated on the drawings, will be determined by the area necessary to complete the work.

D. In no case shall the clearing and grubbing limits extend beyond property and/or easement lines established by the Owner, unless the Contractor obtains permission from the adjoining owner or owners.

1.5 Disposal of Materials:

A. The Contractor shall submit a plan for the satisfactory disposal of materials and debris from the clearing and grubbing operations for approval by the Engineer.

B. The Contractor must comply with all local, state, and federal laws and ordinances pertaining to the type material being disposed of and secure and submit written permission from any applicable agencies regarding the method of disposal.

END OF SECTION 02110

SECTION 02200 - EARTHWORK

PART 1 - GENERAL

1.1 Related Documents:

A. Drawings and general provisions of the Contract including General, Supplemental, and Special Conditions.

B. Geotechnical Report.

1.2 Summary:

A. This specification section covers stripping, excavation, borrow, fill placement, undercutting, and other items incidental to earthwork operations required to complete the work.

B. For purposes of earthwork construction, all soils shall be classified using the Unified Soil Classification System.

C. The Contractor shall be fully responsible for the disposal of all excess materials resulting from excavation or other earthwork operations.

D. The Contractor shall be fully responsible for furnishing, delivering, and placing all fill material necessary to achieve the finish grades indicated in the contract documents.

E. The Contractor shall be fully responsible for location, construction, maintenance, and removal of all haul road. The Contractor shall be responsible for obtaining all rights-of-way necessary for the completion of the work and not indicated in the Contract Documents.

F. Specifications for excavation and embankment shall follow the most recent edition of the ALDOT Standard Specifications for Highway Construction.

G. The Contractor shall be responsible for the prevention of erosion, runoff control and for the protection of existing streams. Hay bales, silt fencing and sheeting exposed areas shall be utilized to minimize sediment transport from cut areas, temporary spoil piles and other exposed areas.

H. The Contractor is responsible for obtaining stormwater and runoff permits, if required.

I. Where excavations are made adjacent to existing buildings, other structures or utilities or in paved streets or alleys, the Contractor shall take particular care to sheet, shore and brace the sides of the excavation adequately so as to prevent any undermining of or settlement beneath such structures, utilities or pavements. Where necessary, the Contractor shall be responsible for underpinning or bracing existing structures, utilities or pavement to prevent settlement or other damage. Where necessary, the Contractor shall be responsible for temporarily relocating existing utilities. All such relocations shall be coordinated with the Owner of the utility.

J. Sheeting, shoring, and bracing materials shall not be left in place unless shown in the contract documents or approved in writing by the Engineer. Such materials shall be removed in such manner as to protect the work, workmen, the Owner's facilities, adjacent property and the general public.

K. The Contractor shall take all due precautions for the safety of the work, the workmen, the Owner's facilities and the general public.

L. The Contractor shall comply with federal, state, and local ordinances, laws, guidelines and regulations related to earthwork and excavation.

M. In all cases, where materials are deposited around open excavations, they shall be placed so that, in the event of rain, no damage will result to the work or adjacent property.

1.3 Submittals:

A. The Contractor shall submit laboratory test data for each type of compacted fill material indicating the following:

1. Supplier or borrow location.
2. Maximum Standard Proctor Density-ASTM D698.
3. Optimum Moisture Content.
4. Liquid Limit.
5. Plasticity Index.

1.4 Quality Assurance:

A. The Contractor will engage the services to perform in-place density testing, as directed by the Engineer. **(N/A)**

B. The Owner will secure geotechnical services to perform in-place density testing as directed by the Engineer.

1.5 Definitions:

A. Common Excavation:

1. Common excavation shall be defined as the excavation of all material that can be excavated, transported and unloaded by the use of heavy ripping equipment and wheel tractor scrapers with push tractors or that can be excavated and dumped into place or loaded onto hauling equipment by means of excavators having a rated capacity of one cubic yard and equipped with attachments (shovel, bucket, backhoe, dragline, clam shell, rock teeth, etc.) appropriate to the character of the materials and the site conditions.

2. The presence of isolated boulders or rock fragments larger than one cubic yard in size will not in itself be sufficient cause to change the classification of the surrounding material.

B. Removal of Unsuitable Material:

1. Unsuitable Material shall be defined as material not suitable for structural placement. Unsuitable Material shall include, but not limited to, excavation containing topsoil, muck, stumps, concrete, and other debris. The Engineer's determination of what is unsuitable material shall be final.

C. Off-Site Borrow - Select:

1. The Contractor is responsible for the stockpiling of select earth fill, available on site, such that it is not mixed with undesirable materials. The Contractor is further responsible for transporting select earthfill as required for utilization in areas indicated in the Contract Documents. Failure to stockpile and transport select earthfill shall not entitle the Contractor to additional compensation.

2. The Contractor shall provide acceptable material from off site.

PART 2 - PRODUCTS

2.1 General: OMIT

PART 3 - EXECUTION

3.1 General:

A. The Contractor is solely responsible for the means and methods required to perform the excavation, site grading, and backfill operations required to complete the work. No portion of the plans and/or specifications shall be construed as limiting either the extent of excavation required or the equipment required to affect the work.

3.2 Safety:

A. The Contractor shall proceed with the work in a manner to insure the safety of the work, workmen, the general public, adjacent utilities and structures.

B. Excavated surfaces too steep to be safe and stable if unsupported shall be supported as necessary to safeguard the work and workmen, to prevent sliding or settling of the adjacent ground, and to avoid damaging existing improvements. The width of the excavation shall be increased if necessary to provide space for sheeting, bracing, shoring, and other supporting installations. The Contractor shall furnish, place and subsequently remove such supporting installations.

3.3 Placement of Fill:

A. Fill materials shall be as indicated on the drawings or specified elsewhere herein.

B. All areas to receive fill shall be scarified to a depth of 6" and compacted prior to the placement of any fill material.

C. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel wheeled rollers or other equipment well suited to the soil being compacted.

D. Material shall be moistened or aerated as necessary to provide the required moisture content.

E. Satisfactory material shall be placed in 8" inches loose depth and then compacted.

F. No material shall be placed on surfaces that are muddy, frozen, or that contain frost.

G. Sloped surfaces steeper than 4 horizontal to 1 vertical shall be plowed, stepped, benched or broken up as directed by the Engineer.

H. If the surface of any layer becomes too hard and smooth for proper bond with the succeeding layer, it shall be scarified parallel to the axis of the fill to a depth of not less than 6 inches and recompacted before the next layer is placed.

I. The top surfaces of embankments shall be maintained approximately level during construction, except that a crown or cross-slope of not less than 2 percent shall be maintained to insure effective drainage, and except as otherwise specified for drain fill zones. If the drawings or specifications require or the Engineer directs that fill be placed at a higher level in one part of an embankment than another, the top surface of each part shall be maintained as specified above.

J. Fill placed at densities lower than the specified minimum density or at moisture contents outside the specified acceptable range of moisture content or otherwise not conforming to the requirements of the specifications shall be reworked to meet the requirements of removed and replaced by acceptable fill. The replacement fill and the foundation, abutment and fill surfaces upon which it is placed shall conform to all requirements of this specification for foundation preparation, approval, placement, moisture control, and compaction.

K. Compaction requirements for fill shall be as determined by ASTM D 698, with a moisture content of + or - 3% of optimum, and a minimum Standard Proctor of 98%.

3.4 Stripping:

A. Unless otherwise shown on the drawings or specified herein:

1. Strip all areas within permanent easements for pipelines.
2. Strip 5-feet outside of edge of pavement or outside edge of gutter, the greater of the two, for roadways.
3. Strip 5-feet outside of building lines or 5-feet beyond the top of slope for structural excavating.
4. The Contractor may strip additional areas within the limits of the construction easements and/or the job site at its option.

B. Stripping shall be to a depth to remove all topsoil and objectionable materials from the job site.

3.5 Excavation Limits:

A. Excavation for structures shall be sufficiently large for the proper placing of the forms and concrete and for dewatering purposes but shall not be excessively large in horizontal area.

B. Excavation beyond the specified lines and grades (over-excavation) shall be backfilled by the Contractor, at its own expense, with a material acceptable to the Engineer.

C. Excavation for manholes shall not be greater in horizontal area than that required to allow one foot clear between the outer surface of manholes and the wall of the excavation or the sheeting used to protect it.

3.6 Structure Backfill:

A. Backfilling around foundations or structures shall be promptly accomplished.

B. Before backfilling newly constructed walls, the Contractor shall allow all concrete sufficient curing time to obtain strength necessary to withstand backfilling.

C. Selected earthfill shall be used for backfilling, unless otherwise detailed.

D. No trash shall be allowed to accumulate in the space to be backfilled, and this space shall be well cleared before backfill is placed.

E. The backfill shall be compacted by mechanical tamping or rolling in layers not over six (6) inches thick and shall be compacted as indicated on the standard details.

END OF SECTION 02200

SECTION 02205 - PREPARATION OF SUBGRADE

PART 1 - GENERAL

1.1 Work Included:

A. All dikes and structural fill areas that will receive fill material shall be cleared of trees, stumps, roots, brush and other vegetation, debris, existing foundations, pavements, utility lines, structures, fences and other items that would interfere with construction operations. Stumps, logs, roots, and other organic matter will be completely removed.

B. Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials. The surface shall be scarified to a depth of 6 inches before the fill is started.

C. Sub-grade shall be free from any standing water and within the allowable moisture limits, as determined by the Engineer, prior to placement of any fill material.

END OF SECTION 02205

SECTION 02240 - CRUSHED AGGREGATE BASE

PART 1 - GENERAL

1.1 Work Included:

A. This specification gives specific requirements for materials and installation of crushed aggregate base.

1.2 Materials:

A. Materials shall meet the requirements of the latest edition of the State of Alabama Department of Transportation Standard Specifications for Highway Section 825, Gradation Type "B".

1.3 Installation:

A. No material shall be placed until the preceding layer has been approved by the Engineer. Such layer shall be properly shaped according to contours shown on the grading plan.

B. Material shall be mixed to a uniform consistency by road-mixing, yard-mixing, or plant-mixing.

C. Materials found not meeting the requirements of this specification shall be removed by the Contractor or brought into conformance.

D. Material shall be spread to a uniform thickness and compacted to 100% S.P.D. as determined by ASTM D 698. Finished material shall be the thickness noted otherwise on the plans or Bid Schedule.

E. Material shall extend the full width to and shaped to accept curbing as shown by the typical section.

F. Material shall be kept at or near optimum moisture during the compaction process and until the succeeding layer is placed.

G. The Contractor shall shape the finished base to reasonably close conformity to the contours shown by the grading plan.

H. The Contractor shall maintain the base layer until such time as the succeeding layer is placed.

END OF SECTION 02240

SECTION 02250 - TRENCHING, BACKFILL AND COMPACTION

PART 1 - GENERAL

1.1 Summary:

A. This Section of Specifications deals with the requirements for Trenching, Backfill, and Compaction for utility lines placed in roadways, lawns or unimproved property or any other area.

1.2 Products Installed but not Furnished Under This Section:

A. Ductile Iron Pipe and Fittings
B. PVC Pipe
C. Gate Valves
D. Valve Boxes and Vaults
E. Water Service Connections
F. Manholes and Covers
G. Fire Hydrants

1.3 Related Sections:

A. Section 02660 – Water System
B. Section 02722 – Sanitary Sewer System
C. Section 02920 – Seeding and Mulching
D. Section 02600 – Ductile Iron Pipe and Fittings
E. Section 02433 – Storm Sewers

1.4 Payment:

A. Payment for trenching, bedding, backfill, and compaction shall be considered incidental to the cost of the pipe, and no separate payment shall be made.

B. No separate payment shall be made for sloping back of trench walls, shoring, blasting, fence removal and replacement, or the protection and/or replacement of plants, trees, structures, etc. In general, the condition after construction shall be as good, or better, than before construction. No payment will be made unless specifically itemized in the Bid Schedule.

1.5 References:

A. U.S. Department of Labor, Occupational Safety and Health Administration.

B. State of Alabama Department of Transportation Standard Specifications for Highway Construction.

1.6 Project Conditions:

A. Environmental Requirements:

1. The Contractor shall maintain all drainage ways, gutters, etc., at all times. The Contractor at his own expense shall remove any eroded or washed material that enters pipes, ditches, or streams.

2. The Contractor shall provide erosion control as required to protect from damage surrounding areas.

3. All areas damaged as a result of erosion shall be repaired to a condition equal or better than the condition prior to construction, as determined by the Engineer.

PART 2 - PRODUCTS

2.1 Materials:

A. Select Backfill:

1. Unless otherwise shown on the Construction Plans, ***Initial Select Backfill*** to be installed around the pipe shall be No. 8910 crushed limestone meeting or exceeding the requirements of the Alabama Department of Transportation Standard Specifications for Highway Construction, Latest Edition.

2. Unless otherwise shown on the Construction Plans and not including the initial select backfill around the pipe, ***Select Backfill*** where specified or required shall be No. 57 crushed limestone. Crushed stone shall meet or exceed the requirements of the Alabama Department of Transportation Standard Specifications for Highway Construction, Latest Edition, Section 801.

B. Standard Backfill:

1. Standard backfill shall consist of native soils free of large rocks, boulders and other deleterious substances.

C. Bedding:

1. Class "1" Bedding shall be Alabama Department of Transportation Standard Specifications for Highway Construction, Section 801, No. 8910 crushed limestone.

2. Class "2" Bedding shall be reinforced concrete 3000 psi design mix.

3. Unless specified on the drawings or required by the Engineer, pipe shall be bedded in native soil (Class "3").

D. Trench Foundation

1. Trench foundation material shall be Alabama Department of Transportation Standard Specifications for Highway Construction, Section 801, No. 2 crushed limestone. This material shall only be used when approved in advance by the Engineer.

2.2 Source Quality Control:

A. The Contractor shall supply gradation analysis for each type of crushed stone used.

PART 3 - EXECUTION

3.1 Examination of Conditions:

A. The Contractor shall examine the area to be trenched and verify his requirements for trenching.

3.2 Protection and Removals:

A. Fences:

1. All fences in conflict with the proposed construction shall be removed in a neat and workmanlike manner and then replaced immediately following construction operations. Where materials removed are not suitable for reuse, they shall be replaced with new material of equal or better quality and construction. All fences shall be rebuilt to line, with posts well set, wires fastened with new staples or ties and well stretched. All corner and end posts shall be well braced and set a minimum of 30 inches in the ground.

B. Utility Poles, Guy Wires, Miscellaneous Poles, Etc.:

1. All utility poles, guy wires, sign posts and similar private obstructions which are indicated on the plans or existing on the ground shall be removed and replaced by the Contractor at his own expense. In the event street signposts or signs are damaged or destroyed by the Contractor's operations, they may be replaced by the Owner at the Contractor's expense.

2. When it is necessary to remove or adjust any utilities, representatives of the utilities involved shall be notified to decide the method and nature of work to be done. The Contractor shall make satisfactory arrangements with other utilities for the required removal or adjustments at the Contractor's expense, unless otherwise specified.

3. The Contractor shall be held liable for damage, including negligent or willful damage to any other utility and shall pay for the cost of all necessary repairs and any damages resulting to public or private property resulting therefrom.

4. The Contractor shall take whatever means necessary to support sewer mains to their true line and grade when they are encountered during excavation. The pipe shall be supported so that no leakage will occur and under no circumstances will the Contractor be allowed to bypass raw sewage or allow raw sewage to leak into the trench. If a repair becomes necessary the contractor shall use materials of the same type and class of pipe. At a minimum, PVC pipe and fittings shall conform to ASTM D3034, SDR 26. All couplings to existing pipe shall be manufactured couplings and all metal parts shall be stainless steel.

C. Ornamental Shrubs and Trees:

1. Ornamental shrubs and trees shall not be removed unless directed by the Engineer. When ornamental shrubs and/or trees are to be removed and replaced, the following steps shall be followed:

   a. Remove all trees, shrubs or plants, which interfere with construction intact with root system and protect from drying during construction period.

   b. Replace plant to original location as soon as possible, taking care to insure that hole is large enough, and no damage is done to root system.

   c. Fill hole with good topsoil and tamp lightly and firmly into place and water plant.

2. Contractor shall replace with like kind and size if any plant, tree, or shrub which is disturbed by construction and dies within 1 year, at no cost to the Owner.

D. Adjacent Property:

1. The Contractor shall confine his operations to the rights-of-ways and/or easements designated. The Contractor at no additional cost to the Owner shall repair any damage to adjacent property.

E. Private Drives and Sidewalks:

1. The Contractor shall keep all private drives and sidewalks open and accessible at all times.

2. All streets and public roads shall be kept open and accessible to emergency vehicles at all times.

F. Existing Underground Utilities:

1. The Contractor shall protect all existing utilities during the trenching operation. The Contractor shall cooperate fully with the utility's requests for temporary and permanent supports during the trenching operation and shall furnish and install supports at no additional cost to the Owner.
2. Storm sewers in conflict with the proposed trench may be carefully dislodged and stockpiled. The pipes shall be cleaned and replaced immediately after new construction is clear. Storm sewers damaged by the Contractor shall be replaced with new pipe at no additional cost to the Owner. All storm sewers removed shall be re-laid to proper grade on a firm bedding so that settlement will not occur.

3.3 Trench Preparation:

A. Clearing and Grubbing:

1. Where clearing or partial clearing of the right-of-way or easements is necessary, such work shall be completed prior to trench excavation. Projecting materials such as trees, logs, brush, hedges, etc., shall be cut as near to the surface of the ground as possible, and all stumps and roots shall be grubbed out unless specifically stated otherwise. All materials so cleared and grubbed shall be removed from the site. In no case shall excavated materials be allowed to cover brush or trees prior to disposal. Clearing and grubbing costs shall be included in the unit price bid for the related pipe unless a specific line item for clearing and grubbing is included in the bid schedule.

2. The Contractor shall bear all costs of disposing of all cleared and grubbed materials. Unless otherwise specified, all merchantable timber cut from the area designated to be cleared shall become the property of the Contractor.

3. Burning will be permitted, provided the Contractor obtains permits and meets the requirements of the proper fire authorities and any other state, county or local ordinances. Burning on private property will not be permitted without written permission of the Owner of the property. The authority to burn shall in no way relieve the Contractor from damages, which may result from his operations.

4. In no case shall any materials from clearing and grubbing operations be left on the project, or be pushed onto abutting private properties, or be buried in embankments or trenches on the project.

5. On public property, existing trees or limbs over 2 inches in diameter shall not be cut unless they are within 7 feet of pipe centerline or specific permission is received from the Engineer. On private easements or in lawns, no trees or brush shall be cleared or cut without prior approval of the Engineer or Inspector. The Contractor shall be required to remove trees, shrubs or plants on private property intact, and to ball the roots, keep watered as required, and replant in their original location upon completion of pipe laying operations, unless written permission is obtained from the Engineer, or unless otherwise specified. The Contractor shall replace, at his own expense, any trees, shrubs, or plants which shall be damaged as a result of his operations, or which shall die within 1 year of the time it was disturbed or damaged.

B. Saw Cutting:

1. Prior to beginning the trenching operation in paved areas such as roads, drives, and parking lots, all paving shall be saw cut to a minimum depth of 2 inches. All paving materials shall be removed and disposed of prior to the trenching operation.

2. Prior to beginning the saw cutting, all traffic control devices, barricades, cones and permits required shall be obtained and in place.

C. Verification of Existing Utilities:

1. Prior to the excavation but after the saw cutting in paved areas, the Contractor shall unearth all known utilities and confirm the location and depth of such utility sufficiently far enough in advance to adjust the vertical or horizontal alignment of the pipeline if necessary.

3.4 Trench Construction:

A. General:

1. Trenching or excavation for pipe lines shall consist of the excavation necessary for the installation of sanitary or storm sewers, water lines, gas lines, and other utilities and all appurtenant facilities, including manholes, junction boxes, inlets, outlets, thrust blocks, and pipe protection as called for on the Drawings.

2. Trench excavation shall be made in an open cut unless tunneling or other construction methods are specifically authorized, and shall be true to the lines and grades shown on the plans or established by the Engineer.

3. When vertical banks for trench excavation are not practical to construct or create dangerous conditions to workmen, the banks may be sloped provided that such excavation does not damage adjacent structures. However, when trench banks are sloped, such banks shall be cut to vertical planes as specified above for that part of the ditch below the level of one (1) foot above the top of the pipeline.

4. All streets, sidewalks, crossings, fire hydrants, water valves, fire alarm boxes and other similar public utilities are to be kept open or accessible for their intended use.

5. Every drain, gutter, culvert, or sewer for surface drainage encountered is to be kept open for both temporary and permanent flow, or if necessarily closed, other adequate provision for drainage is to be made.

6. In all cases where materials are deposited along open trenches, they shall be placed so that in the event of rain, no damage will result to the work and/or to adjacent property.

7. Pipe trenches shall not be excavated more than 300 feet in advance of pipe laying and temporary bridges or cross walks shall be constructed where required to maintain vehicular or pedestrian traffic.

8. Trench widths shall be confined to dedicated rights-of-way or construction easements, unless special written agreements have been made with the affected property owner. Place all excavated materials within easements or rights-of-way, and do not obstruct any public or private roadways or streets.

9. Where select backfill is specified or required, all excavated materials shall be promptly removed and disposed of by the Contractor.

B. Rock Excavation:

1. Rock encountered in trench excavation for pipe lines shall be removed for the over-all width of trench and to a depth of 6-inches below the bottom of the barrel of pipe 24-inches in diameter and smaller, and 8-inches below the bottom of pipe 24 to 36 inches in diameter, and 12-inches below pipe larger than 36-inches in diameter, if rock extends to such depths.

2. Where pipelines are constructed on concrete cradles, rock shall be excavated to the bottom of the cradle as shown on the plans. When necessary to provide sufficient working space, rock shall be excavated to additional depth for bell holes.

3. After the Engineer has inspected the completed excavation, the space below the ultimate pipe or structure grade shall be filled with an approved foundation material and compacted to the proper grade.

4. Drilling and blasting methods used in rock excavation shall be optional with the Contractor but shall be conducted with due regard to the safety of persons and property in the vicinity of the work and in strict conformity with all laws, ordinances, or regulations governing blasting and the use of explosives. The Contractor shall be licensed for this type of blasting and shall follow the insurance requirements of the general conditions. The Contractor shall also notify the fire department at least 48 hours in advance of any blasting.

5. Rock excavation near existing structures of all types shall be conducted with the utmost care, and every precaution shall be taken to prevent damage to such structures. Any damage or injury of whatever nature to persons or property caused directly or indirectly by blasting operations shall be promptly repaired, replaced, or compensated for by the Contractor at his own expense and to the satisfaction of the persons injured or the owners of the property damaged.

C. Sheeting, Shoring and Bracing:

1. The sides of all trenching excavations shall be sufficiently sheeted, shored, and braced whenever necessary to prevent slides, cave-ins, settlements or movement of the banks and to maintain the excavation clear of obstructions that will, in any way, hinder or delay the progress of the work.

2. Wood or steel sheet piling of ample design and type shall be used when necessary.

3. All sheeting, shoring, and bracing shall have sufficient strength and rigidity to withstand the pressures exerted and to maintain the walls of the excavation properly in place and protect all persons and property from injury or damage.

4. Where excavations are made adjacent to existing buildings or other structures, or in paved streets or alleys, the Contractor shall take particular care to sheet, shore and brace the sides of the excavation adequately so as to prevent any undermining of or settlement beneath such structures or pavement. Underpinning of adjacent structures shall be done when necessary. The Contractor will be liable for any damage to any structure that results from his operations.

5. Sheeting, shoring or bracing materials shall not be left in place unless so shown by the plans or ordered by the Engineer. Such materials shall be removed in such manner as will not endanger or damage the new structure or any existing structures or property, either public or private, in the vicinity, and so as to avoid cave-ins or slides. No trench sheeting and bracing shall be removed until the trench has been backfilled one foot above the top of the pipe.

D. Trenching Through Dikes or Fill Sections:

1. Trenching through existing dikes or fill sections shall be accomplished in accordance with general trenching requirements as specified elsewhere.

2. Trenching for pipe lines or other utilities through dikes or fill sections under construction shall not begin until the new dike or fill section has been constructed, enlarged, or otherwise improved to an elevation 3 feet above the top of the pipe or other utility being installed.

3. Where existing dikes or fill sections are being used for the storage of liquids such as a lagoon, reservoir, pond, lake, canal, or other structure, the Contractor shall take whatever means necessary to preserve the integrity of the structure. No leakage of the stored liquid out of the structure will be allowed without the written approval of the owners of said structure.

E. Minimum Trench Widths:

1. All excavations shall be made to the lines and grades as established by the drawings, and shall be open cut through whatever material encountered. The Engineer may, if requested, make changes in the trench alignment to avoid major obstructions, if such changes can be made within the easement right-of-way without adversely affecting the intended function of the facility. In areas where soil conditions permit normal excavation of the trench, the sides shall be cut as nearly vertical as possible from the bottom of the trench to a point at least 12 inches above the top of the pipe. The trench width shall conform to Table 2 of the AWWA C600 Specification.

3.5 Dewatering:

A. The Contractor shall at all times provide and maintain the necessary equipment and means for removal of all water from excavated areas. All excavated areas shall be kept free of water while any work is in progress. Particular precautions shall be taken to prevent the displacement of structures or pipelines as a result of accumulated water.

B. Bedding material or pipe shall not be placed in wet or unstable trenches. Soil that cannot be properly dewatered shall be excavated and dry material tamped in place to such a depth as may be required to provide a firm trench bottom.

C. All water removed or diverted from excavations shall be disposed of in a manner that will prevent damage to adjacent property or any flooding of streets or property. Disposal of trench water through the pipeline under construction shall not be allowed.

D. Water shall be removed and disposed of so as to not damage adjacent property or existing drainage ways.

3.6 Trench Foundation Material:

A. Where unsuitable materials for supporting pipe cushion are encountered, these materials shall be removed and replaced with trench foundation material, as directed by the Engineer.

B. Trench foundation material shall be placed at the specified trench width from the bottom of the excess excavation to the bottom grade line of the pipe cushion.

C. Trench foundation material so placed shall be as shown on the trench detail drawings or specified herein. If not shown on the drawings, trench foundation material shall consist of Alabama Department of Transportation Standard Specifications for Highway Construction, Section 801, No. 2 crushed limestone.

D. Payment for trench foundation material will be limited to situations approved in advance by the Engineer.

3.7 Bedding and Backfill:

A. General:

1. All areas where bedding is not specifically called for or required by the Engineer, the pipe shall be bedded in native soils. Bell holes shall be excavated so that the entire pipe length rests on firm soil.

2. Areas undercut by the Contractor through negligence, or his convenience, shall be backfilled and tamped with approved materials at the expense of the Contractor. In paved areas, the backfill material shall be select backfill.

3. Bedding shall meet the requirements of Paragraph 2.01 of these specifications.

4. Backfilling shall not begin before the Engineer or Inspector has inspected the grade and alignment of the pipe.

5. If select backfill is not specified, backfilling to a point 12-inches above the top of the pipe, defined as the pipe zone, shall be done with good earth, sand or gravel and shall be free from large rocks or hard lumpy materials. Large rocks shall be defined as any larger than 2-inches in diameter. No materials of perishable, spongy or otherwise unsuitable nature shall be used in backfilling. It is essential that the completed backfill be done in such a manner as to minimize voids in the backfill.

6. Place trench backfill material at approximately the same rate along both sides of the pipe and compact by tamping in layers not to exceed 8 inches of loose fill up to the horizontal centerline of the pipe. The intent is to cradle the pipe so that the full length is uniformly supported on firm bedding and the weight of the pipe and backfill is borne uniformly by the lower half of the pipe barrel. Special attention should be given to the backfilling and tamping procedures to insure that no voids or un-compacted areas occur beneath the pipe. The use of granular material for backfill in the pipe zone shall constitute a pay item only when so directed by the Engineer. After this, fill and compact the trench as specified below, depending upon the location of the work and danger from subsequent settlement.

7. All backfilling shall be done in such a manner that will not disturb or injure the pipe or structure over or against which it is being placed. Any pipe or structure injured, damaged, or moved from its proper line or grade during backfilling operations, shall be replaced or repaired and then re-backfilled as herein specified, at the expense of the Contractor.

B. Trench Backfill and Pipe Bedding:

1. Pipe bedding and trench backfill shall be constructed as shown on the drawings for trench details. If no trench details are shown on the drawings, then the Contractor shall install the utilities as described in Paragraphs 3.07 B.3 and 3.07 B.4.

2. Where pipes are installed in unpaved areas, unless specifically shown on the drawings or called out in the Bid Schedule to be unimproved, the areas shall be considered to be ***Improved*** areas and shall be constructed accordingly.

3. *Pipe Bedding and Trench Backfill – ***Gravity Pipe***:

a. Under Pavement (Asphalt or Concrete and/or Gravel Drives):

Pipe Material – Ductile Iron and/or Concrete

Bedding –	6" ALDOT No. 57 crushed limestone
Initial Backfill –	Select Backfill ALDOT No. 57 from bottom of pipe to springline in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Select backfill ALDOT No. 57 to top of trench in maximum 8" loose layers mechanically consolidated in-place (no exceptions).

Pipe Material – PVC and/or HDPE

Bedding –	6" ALDOT No. 57 crushed limestone.
Initial Backfill –	Select Backfill ALDOT No. 57 from bottom of pipe to top of pipe in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Select backfill ALDOT No. 57 to top of trench in maximum 8" loose layers mechanically consolidated in-place (no exceptions).

b. Improved Areas:

Pipe Material – Ductile Iron and/or Concrete

Bedding –	6" ALDOT No. 57 crushed limestone.
Initial Backfill –	Select Backfill ALDOT No. 57 from bottom of pipe to springline of pipe in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Standard backfill to top of trench in maximum 8" loose layers compacted to 98% SPD.

Pipe Material – PVC and/or HDPE

Bedding –	6" ALDOT No. 57 crushed limestone.
Initial Backfill –	Select Backfill ALDOT No. 57 from bottom of pipe to 12" above top of pipe in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Standard backfill to top of trench in maximum 8" loose layers compacted to 98% SPD.

c. Unimproved Areas: **See trench details included in the construction plans.**

***See trench details included in the construction plans.**

4. *Pipe Bedding and Trench Backfill – ***Pressure Pipe***:

a. Under Pavement (Asphalt or Concrete and/or Gravel Drives):

Pipe Material – Ductile Iron

Bedding -	Class 3 Native Material **
Initial Backfill –	Select Backfill ALDOT No. 57 from bottom of pipe to top of pipe in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Select backfill ALDOT No. 57 to top of trench in maximum 8" loose layers mechanically consolidated in-place (no exceptions).

Pipe Material – PVC

Bedding -	Class 3 Native Material **
Initial Backfill –	Select Backfill ALDOT No. 8910 from bottom of pipe to 12" above top of pipe in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Select backfill ALDOT No. 57 to top of trench in maximum 8" loose layers mechanically consolidated in-place (no exceptions).

b. Improved Areas:

Pipe Material – Ductile Iron

Bedding –	Class 3 Native Material **
Initial Backfill –	Standard backfill from bottom of pipe to springline in maximum 8" loose layers compacted to 98% SPD.
Final Backfill –	Standard backfill to top of trench in maximum 8" loose layers compacted to 98% SPD.

Pipe Material – PVC

Bedding -	Class 3 Native Material **
Initial Backfill –	Select Backfill ALDOT No. 8910 from bottom of pipe to 12" above top of pipe in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Standard backfill to top of trench in maximum 8" loose layers compacted to 98% SPD.

c. Unimproved Areas: **See trench details included in the construction plans.**

***See trench details included in the construction plans.**

*** *Where trench bottom is rock provide 6" layer of trench foundation material as approved by the Engineer.***

5. *Pipe Bedding and Trench Backfill – Utility Duct Banks (If not concrete encased):

a. Under Pavement (Asphalt or Concrete and/or Gravel Drives):

Pipe Material –	PVC
Bedding –	4" ALDOT No. 8910 crushed limestone.
Initial Backfill –	Select Backfill ALDOT No. 8910 from bottom of pipe to 12" above top of shallowest pipe in duct bank in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Select backfill ALDOT No. 57 to top of trench in maximum 8" loose layers mechanically consolidated in-place (no exceptions).

b. Improved/Unimproved Areas:

Pipe Material –	PVC
Bedding –	4" ALDOT No. 8910 crushed limestone.
Initial Backfill –	Select Backfill ALDOT No. 8910 from bottom of pipe to 12" above top of shallowest pipe in duct bank in maximum 8" loose layers mechanically consolidated in-place (no exceptions).
Final Backfill –	Standard backfill to top of trench in maximum 8" loose layers compacted to 98% SPD.

3.8 Cleaning:

A. The Contractor shall thoroughly clean all areas damaged during construction of excess fill, construction debris, etc.

B. All gutters and adjacent curbing shall be swept clean of debris and materials that may hinder storm water flow.

3.9 Protection:

A. The Contractor shall protect the newly constructed pipeline from damage until final acceptance of the work.

END OF SECTION 02250

SECTION 02272 - RIPRAP

PART 1 - GENERAL

1.1 Work Included:

A. Riprap shall be placed within the limits and dimensions shown on the drawings or as directed by the Engineer.

B. Riprap shall be of the Class shown on the plans and listed in the Unit Price Bid Schedule and shall be defined in the latest edition of the ALDOT Standard Specifications for Highway Construction.

C. All slopes to be treated with riprap shall be trimmed to the lines and grades indicated on the drawings. Loose material shall be compacted by methods approved by the Engineer.

D. Geotextile fabric shall be placed under all riprap. Fabric shall be Mirafi FW 700 or approved equal.

E. Stone bedding shall be placed on the geotextile fabric prior to installing the riprap. The permanent riprap installation with stone bedding and geotextile filter fabric detail is shown in the plans.

END OF SECTION 02272

SECTION 02290 – SLOPE PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.1 Section Includes:

A. This section of specifications covers the requirements of the contractor to protect the project site and adjoining properties from soil erosion and runoff. Section reviews methods of construction, erosion control measures, maintenance of erosion control features, and construction runoff permitting.

1.2 Related Sections:

A. Section 02250 – Trenching, Backfill, and Compaction
B. Section 02920 – Seeding and Mulching

PART 2 - MATERIALS

2.1 Temporary Berms:

A. A temporary berm is constructed of compacted soil or riprap, with or without a shallow ditch, at the top of fill slopes or transverse to the centerline of fills. These berms are used temporarily at the top of newly constructed slopes to prevent excessive erosion until permanent controls are installed or slopes stabilized.

2.2 Temporary Slope Drains:

A. A temporary slope drain is a facility consisting of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half-round pipe, metal pipe, plastic pipe, sod or other material acceptable to the Engineer that may be used to carry water down slopes to reduce erosion.

2.3 Sediment Structures:

A. Sediment basins, ponds, and traps are prepared storage areas constructed to trap and store sediment from erodible areas in order to protect properties and stream channels below the construction areas from excessive siltation.

2.4 Check Dams:

A. Check dams are barriers composed of logs and poles, large stones, or other materials placed across a natural or constructed drainway.

2.5 Temporary Seeding and Mulching:

A. Temporary seeding and mulching are measures consisting of seeding, mulching, fertilizing, and matting utilized to reduce erosion. All cut and fill slopes, including waste sites and borrow pits, shall be seeded when and where necessary to control erosion.

2.6 Brush Barriers:

A. Brush barriers shall consist of brush, tree trimmings, shrubs, plants, and other approved refuse from the clearing and grubbing operation.

B. Brush barriers are placed on natural ground at the bottom of fill slopes, where the most likely erodible areas are located, to restrain sedimentation particles.

2.7 Baled Hay or Straw Checks:

A. Baled hay or straw erosion checks are temporary measures to control erosion and prevent siltation. Bales shall be either hay or straw, containing five (5) cubic feet or more of material.

B. Baled hay or straw checks shall be used where the existing ground slopes toward or away from the embankment along the toe of slopes, in ditches, or other areas where siltation erosion or water runoff is a problem.

2.8 Temporary Silt Fences:

A. Silt fences are temporary measures utilizing woven wire or other approved material attached to posts with filter cloth composed of burlap, plastic filter fabric, etc., attached to the upstream side of the fence to retain the suspended silt particles in the run-off water.

PART 3 - EXECUTION

3.1 General:

A. The Contractor shall obtain an NPDES permit in accordance with requirements of this section and in compliance with regulations established by the EPA and the ADEM.

B. The Contractor shall exercise planning and forethought in coordinating the work of protecting the project and adjoining properties from soil erosion by effective and continuous erosion control methods of either a temporary or a permanent nature.

C. Prior to construction, the Contractor shall meet with the Engineer and review in detail the expected problem areas in regard to the erosion control work. Different solutions shall be discussed so that the best method might be determined. It is the responsibility of the Contractor to develop an erosion control plan acceptable to the Engineer. Erosion control measures shown on the Drawings or in Standard Details are the minimum required and are meant as a guide for the Contractor.

D. Before beginning work on the site, the Contractor shall submit to the Engineer, for his review and approval, a plan for control of soil erosion.

E. The Contractor shall plan his clearing work and his entire construction operations in such a manner as to effectively control soil erosion and prevent pollution of streams, ponds, and/or drains as would result from silt or soil runoff or as would result from any materials used in the construction operations such as oil, grease, paints, chemicals, or any construction debris.

F. The Contractor shall intercept and block drainage from the construction site by means of silt fences, silt barriers, sedimentation pools or other measures as required.

G. Silt fences, wherever used on the site, shall consist of hay bales securely fastened in place or, if approved, permeable-barrier fabric designed to filter water and retain silt. Fabric shall be set securely in the ground and firmly held in place.

H. The erosion control work shall cover all disturbed areas within the project and/or easement along which the project has been installed. Erosion control work shall not be limited to the easement but shall include all disturbed areas as necessary.

3.2 Methods of Construction:

A. The Contractor shall use any of the acceptable methods necessary to control soil erosion and prevent the flow of sediment to the maximum extent possible. These methods shall include, but not be limited to, the use of water diversion structures, diversion ditches, and settling basins.

B. Construction operations shall be restricted to the areas of work indicated on the Plans and to the area which must be entered for the construction of temporary or permanent facilities. The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow, and fill operations and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of the wetlands and adjacent watercourses. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, mats, or other control devices or methods as necessary to control erosion.

C. Excavated soil material shall not be placed adjacent to wetlands or watercourses in a manner that will cause it to be washed away by high water or runoff. Earth berms or diversions shall be constructed to intercept and divert runoff water away from critical areas. Diversion outlets shall be stable or shall be stabilized by means acceptable to the Engineer. If, for any reason, construction materials are washed away during the course of construction, the Contractor shall remove those materials from the fouled areas as directed by the Engineer at no cost to the Owner.

D. For work within easements, all materials used in construction such as excavation, backfill, roadway, and pipe bedding and equipment shall be kept within the limits of the easements.

E. The Contractor shall not pump silt-laden water from trenches or other excavations into wetlands or adjacent watercourses. Instead, silt-laden water from excavations shall be discharged within areas surrounded by baled hay or into sediment traps to ensure that only sediment-free water is returned to the watercourses. Damage to vegetation by excessive watering or silt accumulation in the discharge area shall be avoided.

F. Prohibited construction procedures include, but are not limited to, the following:

1. Dumping of spoil material into any streams, wetlands, surface waters, or unspecified locations.

2. Indiscriminate, arbitrary, or capricious operation of equipment in wetlands or surface water areas.

3. Pumping of silt-laden water from trenches or excavations into surface waters or wetlands.

4. Damaging vegetation adjacent to or outside of the construction area limits.

5. Disposal of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in wetlands, surface waters, or unspecified locations.

6. Permanent or unauthorized alteration of the flow line of any stream.

G. Any temporary working roadways required shall be clean fill approved by the Engineer. In the event fill is used, the contractor shall take every precaution to prevent the fill from mixing with native materials of the site. All such foreign fill materials shall be removed from the site following construction.

3.3 Erosion Checks:

A. The Contractor shall furnish and install baled hay or straw erosion checks in all locations indicated on the Plans, surrounding the base of all deposits of stored excavated materials outside of the disturbed area, and where indicated by the Engineer. Checks, where indicated on the Plans, shall be installed immediately after the site is cleared and before excavation has begun at the locations indicated. Checks located around stored material shall be located approximately 6-feet from that material. Bales shall be held in place with two 2-inches by 2-inches by 4-feet wooden stakes. Each bale shall be butted tightly against the adjoining bale to preclude short-circuiting of the erosion check.

3.4 Maintenance of Erosion Control Features:

A. The temporary erosion control features installed by the Contractor shall be acceptably maintained by the Contractor until no longer needed or permanent erosion control methods are installed. Any materials removed shall become the property of the Contractor.

B. Silt fences shall have sediment deposits removed if it reaches a depth of fifteen inches (15") or ½ the height of the fence. Sediment removed from the silt fence shall be removed from the site.

C. In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of work as scheduled, and are ordered by the Engineer, such work shall be performed by the Contractor at his own expense.

3.5 Construction Runoff Permitting:

A. It shall be the responsibility of the contractor to obtain a State NPDES General Permit ALG610000 for construction site runoff as part of this project. Application for coverage is made by submittal of a Notice of Intent (NOI) and a permit fee to:

ADEM – Water Division
Water Division – Stormwater Management Branch
Post Office Box 301463
Montgomery, Alabama 36130-1463
Telephone (334) 271-7700

B. The construction general permit requires the Contractor to use Best Management Practices (BMPs) to control storm water runoff. The general permit requires inspections on monthly basis to ensure compliance with State water quality standards. Onsite precipitation must also be recorded.

END OF SECTION 02290

SECTION 02433 - STORM SEWERS

PART 1 - GENERAL

1.1 Work Included:

A. This section shall cover the work of furnishing and constructing storm sewers of the kind, strength, and size pipe provided in the proposal in accordance with the requirements of these specifications and installing such sewers at the location shown on the plans or designated and in conformity with established lines and grades. These items shall also include the furnishing and construction of such joints necessary, cutting and connections to other pipe, catch basins, in-walls, etc., and may be required to complete the work shown on the plans or as directed.

1.2 Products:

A. Materials:

1. Concrete Pipe: All pipe material shall be reinforced concrete pipe, Class III, Class IV, and Class V, conforming to ASTM C-76 Specifications, minimum. Pipe extensions shall be of the type and class of piping being extended.

2. Plastic Pipe: All plastic pipe shall be HDPE (High Density Polyethylene) storm sewer pipe, double walled, smooth inner wall, bell and spigot joints, and rubber O-rings, conforming to ASTM F-477.

3. Pipe Extensions: Pipe extensions shall be of the type and class of piping extended.

1.3 Execution:

A. Trenches: The trench shall be excavated beginning at the outlet end and proceed upgrade true to the established line and grade. Trenches shall be properly sheeted and braced wherever needed and conform to Section 02250 of these Specifications and trench standard details in the Construction Plans.

B. Pipe Laying: The laying of pipes and finished trenches shall be started at the outlet end and proceed upgrade so that the spigot or groove ends point in the direction of the flow. All pipe shall be laid with ends abutting and with not more than one inch variation from established alignment at the vertical center line or from grade at the flow line. The bottom of the trench shall be shaped accurately to the outside surface of the pipe for a depth of at least 1/10 of the outside diameter. The pipe shall be fitted and matched so that when laid in the work, they will form a sewer with a smooth uniform invert. Hubs or bells shall be carefully cleaned before pipes are lowered into the trenches. Pipes shall be so lowered as to avoid damage and unnecessary handling in the trench.

C. Sealing Joints: Joints shall be sealed with mortar, bituminous plastic cement, rubber type gaskets or other type sealers that may be approved. Joints shall be thoroughly cleaned before being sealed and shall be sealed for the full circumference of the joint unless otherwise directed.

D. Backfilling: All trenches and excavation shall be bedded and backfilled as shown on the drawings. Backfilling shall not begin until mortar joints have cured or until backfilling is authorized by the Engineer.

END OF SECTION 02433

SECTION 02500 - ASPHALT PAVING

PART 1 - GENERAL

1.1 Section Includes:

A. This Section of Specifications covers the material and installation requirements for asphalt patching over excavated trenches in roads, parking lots and driveways.

B. This Section of Specifications covers material and installation requirements for asphalt overlay, asphalt full build-up in roads, parking lots, and driveways.

1.2 General Information:

A. The Contractor shall refer to the bid proposal for the type of payment to be made for patching and paving. Measurement for asphalt patching shall be the trench width as specified by Table 2 of AWWA C600 plus 2 feet. The trench width for utilities and utility services less than 4 inches shall be 2-feet. For manholes, cleanouts and other fittings, the measurement shall allow 2-feet on all sides of the actual dimension of the fitting itself.

B. The average weight per square yard of plant mix to be placed will be specified by the plans. The Engineer may direct in writing that the designated weight be increased or decreased in certain areas. It shall be the Contractor's responsibility to place and spread the material uniformly to such thickness as will produce the specified average weight per square yard, separately for each layer of base, binder, and surface, and to maintain a continuing check on tonnage and yardage throughout the day's operation to insure uniform specified weight.

If the average weight per square yard of any unit is found deficient by more than 10 percent of the specified average weight per square yard, the Engineer will determine (1) whether the Contractor shall remove and replace the deficient unit without payment for the removal or the material removed, or (2) whether the Contractor may leave the deficient unit in place and cover it with a layer of the same mix of adjusted maximum size aggregate, of not less than 80 pounds per square yard average. In case (2), the surface layer shall not be featheredged at the end of the overlay layer, but a sufficient amount of the surface beyond the ends of the deficient unit shall be removed, to a neat line across the pavement, to allow placing the full 80 pounds per square yard and make a joint that will meet the surface requirements. The Contractor will be paid for the deficient layer plus as much of the 80 pound overlay as is needed to bring the total up to the designated average weight per square yard for that unit.

If the average weight per square yard placed for any unit is more than ten (10) percent in excess of the weight specified by the Engineer, the amount over 110% shall not be paid for.

Measurement shall be taken from the actual width of paving in feet times the length of paving in feet divided by nine (9) to obtain square yardage.

Measurement for asphalt leveling shall be taken from the actual truck weights with the weight tickets being furnished at the job site with each truck. Only tickets received on the day the asphalt is installed shall be accepted.

1.3 References:

A. State of Alabama Department of Transportation Standard Specifications for Highway Construction, Latest Edition.

1.4 Quality Assurance:

A. The work of asphalt paving shall be accomplished by skilled workmen experienced in the laying of asphalt.

B. All equipment shall be of a design and size to successfully accomplish the work.

1.5 Project Conditions:

A. The Contractor shall comply with all environmental laws and requirements pertaining to the work.

B. The Contractor shall take adequate measures to control dust in the work area.

C. The Contractor shall thoroughly inspect the backfilled trench and assure himself that proper laying conditions exist.

D. The Contractor shall provide and maintain adequate and safe traffic control.

PART 2 - PRODUCTS

2.1 Materials:

A. Prime Coat:

1. Prime Coat shall be emulsified asphalt, Type AE-P, tar types RT2 or RT3, or cutback asphalts MC 250, RC70 or RC250 as defined in Section 804 of the Alabama Department of Transportation Standard Specifications.

2. Prime Coat shall be applied at the rate of 0.22 to 0.25 gallons per square yard over the entire area to be treated with asphalt.

B. Tack Coat:

1. Tack coat shall be emulsified asphalt type SS-1, SS-1h, or RS-2 or Asphalt Cement Grade AC-10 or AC-20 as defined in Section 804 of the State of Alabama Department of Transportation Standard Specifications.

2. Tack Coat shall be applied at a rate not to exceed 0.10 gallons per square yard.

C. Asphalt Patch:

1. Asphalt paving used in patching shall be Improved Bituminous Concrete Binder as defined in Section 424 of the State of Alabama Department of Transportation Standard Specifications.

2. Materials shall meet the requirements of Article 424.02 of the above mentioned specifications.

3. The Contractor shall refer to the Bid Proposal or Drawings for the quantity of material to be applied per square yard.

D. Asphalt Paving:

1. Asphalt paving used in paving shall be Improved Bituminous Concrete Plant Mix, meeting the specification outlined in Section 424 of the State of Alabama Department of Transportation Specifications.

2. Asphalt final layer placed for paving and/or overlay in streets, parking lots, drives, and patches shall be Improved Bituminous Concrete Wearing Surface, Mix "A" and all materials used shall conform to Article 424 of the State of Alabama Department of Transportation Specifications.

3. The Contractor shall refer to the Bid Proposal or Drawings for the quantity of material to be applied per square yard.

E. Traffic striping and control markings shall conform to Sections 701 and 703 of the State of Alabama Department of Transportation Standard Specifications for Highway Construction. All striping, delineations, markers, etc., damaged or destroyed during the construction shall be replaced by the Contractor at his expense.

F. Before overlaying the street, the Contractor shall raise or lower all valve boxes, manholes and other embedded items, including items that have previously been paved over. No extra payment will be made for these adjustments.

G. AKG Surfacing:

1. The Contractor shall clear, grub, scarify and compact the sub-base prior to placing the base material.

2. Base material shall be as defined in Section 825, Type B, of the State of Alabama Department of Transportation Standard Specifications, and shall be compacted to 98% SPD.

3. AKG Surface shall be as defined in Section 401 of the State of Alabama Department of Transportation Standard Specifications.

2.2 Equipment:

A. Equipment used in asphalt patching and/or asphalt paving shall meet the requirements of Article 410.03a of the State of Alabama Department of Transportation Specifications.

B. Equipment used in the application of Prime Coat and Tack Coat shall comply with Article 401.03a of the above mentioned Specifications.

2.3 Temperature and Weather Requirements:

A. Prime and Tack Coat:

1. Bituminous materials shall not be placed on wet surfaces or when the air temperature is below 60-degrees F.

2. Bituminous materials shall not be placed when the temperature is expected to fall below freezing during the night regardless of the daytime temperature.

B. Asphalt Patching and Overlay:

1. The asphalt mixture shall be placed only upon an approved underlying course that is dry.

2. Asphalt layers of 200-pounds per square yard or less shall not be placed when the air temperature is below 40-degrees F. The air temperature must be 40-degrees F. and rising before the spreading operation is started and the spreading operation shall be stopped when the air temperature is 45-degrees F. and falling.

3. For asphalt layers over 200-pounds per square yard, the above temperatures shall be lowered by 5-degrees.

PART 3 - EXECUTION

3.1 Execution:

A. Prime and Tack Coat:

1. All loose material, dust and foreign material shall be removed from the surface. Cleaning shall be continued until all caked and loose dirt and dust are removed.

B. Asphalt Patching:

1. All designated areas to be patched shall be trimmed to neat vertical lines to the depth of patch specified. All loose material shall be removed. A prime or tack coat shall be applied as specified above. The asphalt shall be placed and compacted to a degree that further consolidation of the patch is not anticipated.

2. Any patched areas that do consolidate shall be replaced or additional material brought in to bring the patch up to the surrounding level.

3. All asphalt or concrete streets, parking areas and drives shall be patched the same day they are cut. Temporary or cold patch material may be used until the permanent patch can be placed; however, no extra payment will be made for temporary patching.

4. The Contractor shall delineate with construction warning signs (lighted at night) any "bump" and/or rough patch areas that will greatly impact the public until the patch is complete and smoothly graded with no settlement.

3.2 Application:

A. Prime and Tack Coat:

1. Prime and Tack Coat shall be uniformly applied at the rate specified by pressurized distributors.

2. All areas to be treated with an asphalt surface treatment shall be primed and/or tacked.

B. Asphalt Patch and Overlay:

1. Asphalt patching may be applied with spreaders, by hand, or with motor graders. All areas inaccessible to large equipment shall be spread by hand.

2. Asphalt patching shall be thoroughly compacted through the use of steel wheeled rollers and/or rubber tired rollers. Density shall be as specified on the drawings in the Bid Proposal or in the State of Alabama Department of Transportation Standard Specifications.

3. Asphalt paving overlay shall be applied with spreaders; except in inaccessible areas spreading may be done by hand, uniformly placing the desired rate per square yard over the underlying surface.

4. As soon as the mixture has set sufficiently to prevent cracking, the mixture shall be rolled with steel wheel and rubber-tired rollers to compact the mixture. Density shall be as specified on the drawings or in the Bid Proposal.

3.3 Testing and Surface Requirements:

A. Testing of the asphalt mixtures shall be performed at the discretion of the Engineer. Testing shall include but not be limited to density tests and extraction tests.

B. The finished surface of asphalt overlays shall be checked with string, level and/or straightedge. The finished surface shall not vary more than 1/4" from the required sections as measured at right angles to the roadway centerline. The finished surface shall not vary more than 3/8" in any 25-foot section measured parallel to the centerline at the following locations: one foot inside of the edges of pavement, at the centerline and at other points as designated.

3.4 Maintenance:

A. The contractor shall maintain and protect the newly laid asphalt until final acceptance of the work.

END OF SECTION 02500

SECTION 02528 - CONCRETE CURB AND GUTTER

PART 1 - GENERAL

1.1 Work Included:

A. Concrete curb and gutters, valley gutters and other curbing, shall be constructed to the shape and cross-sections as shown on the detail drawing.

B. Curb and gutters, valley gutters, etc., shall be placed on material meeting or exceeding the requirements of the processed roadbed or base material underlying adjacent paving.

C. Concrete for all curbing shall be a minimum of 3000 psi and meet the requirements of the concrete specifications.

1.2 Forms:

A. Contractor shall use standard type metal forms for all curbing except where noted.

B. Forms shall be straight and free from warps and adequately braced to insure no moving during concrete placement.

C. Where short radii occur forms may be constructed of wood and bent to form the proper curvature, if approved by the Engineer. All wood forms so used shall provide the required shape and cross-section as the standard metal forms.

D. Hand forming and pouring of curbing shall be of the highest quality. This pertains to areas where the Contractor makes tie-ins or pours curbing, valley gutter, etc., in decorative locations where machine curb is not possible. High quality will be considered consistent, straight pours, with almost no waving, depressions, or deviations in the general shape of the curb, gutter, etc., required as shown on the Standard Details in the Construction Plans. Low quality, non-aesthetically pleasing concrete work shall be removed and reinstalled at the Contractor's expense.

1.3 Machine Curbs:

A. Machine curbs are acceptable where approved in writing by the Engineer.

B. Approval by the Engineer will require a field demonstration of the acceptability of the machine to be used.

1.4 Protection of Curbs:

A. The Contractor shall be fully responsible for the protection of all curb and gutter sections until final acceptance of the work.

B. Any damaged, misaligned, or otherwise unacceptable section of curb and/or curb and gutter combination shall be replaced at no cost to the Owner.

1.5 Method of Measurement:

A. Quantities for curb and/or curb and gutter combinations shall be determined by field measurement.

END OF SECTION 02528

SECTION 02950 - CONCRETE CURB AND GUTTER

PART 1 - GENERAL

1.1 Work Included:

A. Concrete curb, curb ramps, valley gutters and other curbing shall be constructed to the shape and cross section as shown on the detail drawings.

B. Curb and gutter, valley gutters, etc., shall be placed on a prepared surface as specified in the applicable sections of the specifications or base material immediately ahead of paving.

C. Concrete for all curbing shall be a minimum of 3500 psi and meet the requirements of the concrete specifications.

1.2 Forms:

A. Curb and/or shall use standard type metal forms for all curbing unless otherwise noted.

B. Forms shall be straight, free from warps and adequate to secure a true line and grade.

C. Where short radii curves are required, metal forms may be bent to form the proper curvature. If approved by the Engineer, all wood forms may be used and shall be sawed to the proper radius and be free from defects.

D. Metal forming equipment shall be of the highest quality. The profiles of the forms when in position shall be of such rigidity that they will not spring under the pressure of the concrete placed against them. Forms shall be set to the required line and grade sufficiently in advance of the placing of concrete to permit adjustments and checking of the forms immediately before placing concrete. Forms shall be cleaned and oiled before each use.

1.3 Inspection of Work:

A. Notify the Engineer 24 hours in advance of the beginning of any work.

B. Approval by the Engineer will require a final determination of the acceptability of the entire completed unit.

1.4 Protection of Curbs:

A. The Contractor shall be fully responsible for the protection of all curb and gutter against damage until final acceptance by the Owner.

B. Any damaged, misaligned, or otherwise unacceptable section of curb and/or curb and gutter shall be removed and replaced at no cost to the Owner.

1.5 Limited Use Areas:

A. Curb ramps for curb and gutter construction shall be determined by the following requirements:

SECTION 02600 - DUCTILE IRON PIPE AND FITTINGS

PART 1 - GENERAL

1.1 Section Includes:

A. This section of specifications covers the material and installation requirements for ductile iron pipe and fittings.

B. The testing requirements for materials, in-place, specified under this section shall conform to Section 2660 – Water System and Section 2722 – Sanitary Sewer System.

1.2 Related Sections:

A. Section 02250 – Trenching, Backfilling, and Compaction

B. Section 02722 – Sanitary Sewer System

C. Section 02660 – Water System

1.3 References:

A. ANSI/AWWA C104/A21.4 – American National Standard for Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.

B. ANSI/AWWA C105/A21.5 – American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.

C. ANSI/AWWA C110/A21.10 – American National Standard for Ductile-Iron and Gray-Iron Fittings, 3-in. through 48-in., for water and other liquids.

D. ANSI/AWWA C111/A21.11 – American National Standards for Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.

E. ANSI/AWWA C115/A21.15 – American National Standard for Flanged Ductile-Iron Pipe with Ductile-Iron of Gray-Iron Threaded Flanges

F. ANSI/AWWA C150/A21.50 – American National Standard for the Thickness Design of Ductile-Iron Pipe.

G. ANSI/AWWA C151/A21.51 – American National Standard for Ductile-Iron Pipe, Centrifugally Cast for Water and Other Liquids.

H. ANSI/AWWA C153/A21.53 – American National Standard for Ductile-Iron Compact Fittings for Water Service.

I. AWWA C600 – Installation of Ductile Iron Water Mains and Their Appurtenances.

1.4 Quality Assurance:

A. All piping, fittings, and appurtenances installed by the Contractor shall be new and unused and shall be suitable for the intended purposes.

B. Each joint of pipe shall be plainly marked at the site of manufacturer to indicate the class, thickness, and/or strength.

1.5 Delivery, Storage and Handling:

A. All ductile iron pipe and fittings are subject to inspection at delivery and other times as deemed necessary by the Engineer. Any pipe and/or fittings damaged during delivery shall be promptly removed from the job site.

B. Ductile-iron pipe shall be stored off the ground supported by timbers, railings or concrete supports and shall be of sufficient size to avoid contact with the ground or adjacent piping. Supports shall have chocks to prevent movement. Stacking shall be low enough to provide a safe condition, especially in neighborhoods and accessible areas.

C. Pipe and fittings shall be stored to prevent damage to the interior or exterior lining. The interior of all pipe and fittings shall be kept free of dirt and debris. Ductile iron pipe shall not be stacked higher than specified in Table 1 of AWWA C600.

D. Pipe and fittings shall be loaded and unloaded by hoists or skids to avoid sudden impact to the material. In no case shall the pipe or fittings be dropped. Slings, hooks, or pipe tongs shall be padded to avoid damage to the exterior or interior linings.

E. Gaskets for mechanical joint and push-on joint pipe and fittings shall be stored in a cool dry place out of direct sunlight. Contact with petroleum based substances is prohibited.

PART 2 - PRODUCTS

2.1 Approved Manufacturers:

A. American Cast Iron Pipe Company
B. U.S. Pipe
C. Others as approved by the Engineer

2.2 Materials: Ductile iron pipe and fittings shall conform to the following:

A. Pipe and Fittings

1. In general, ductile iron pipe for underground work shall have push-on or mechanical joints; ductile iron pipe for exposed work shall have flanged joints. Where shown on the drawings, grooved-end pipe shall be used to allow removal of valves and fittings.

2. Ductile iron pipe with push-on or mechanical joints shall conform to ANSI/AWWA C150/A21.50 and ANSI/AWWA C151/A21.51, latest revision. Push-on or mechanical joints shall conform to the requirements of ANSI/AWWA C111/A21.11.

3. Pipe pressure classes and wall thicknesses shall be in accordance with bury depths and laying conditions as specified in C150/A21.50 and C151/A21.51. Unless otherwise shown differently on the Drawings or in the Bid Schedule minimum pipe requirements are as follows:

   a. Minimum pressure classes for buried ***water*** pipe shall be 350 psi for pipes ≤12 inches, 250 psi for pipes ≤ 24 inches, and 150 psi for pipe ≥ 30 inches in diameter.

   a. Minimum thickness classes for buried ***sewer*** pipe shall be AWWA thickness Class 52 for pipes ≤16 inches, Class 50 for pipes ≥ 18 inches in diameter.

4. Ductile iron pipe with flanged or grooved joints shall conform to the requirements of ANSI/AWWA C115/A21.15 (including appendix) and shall have a pressure rating of 350 psi for pipes ≤ 12 inches, and a pressure rating of 250 psi for pipes ≥ 14 inches. Flanges for threading onto ductile iron pipe shall conform to the requirements of ANSI/AWWA C115/A21.15.

5. Fittings for ductile iron pipe with push-on or mechanical joints shall conform to the requirements of ANSI/AWWA C110/A21.10 and shall have a pressure rating of 350 psi for sizes ≤ 24 inches, and a pressure rating of 250 psi for sizes ≥ 30 inches. Ductile iron fittings for ductile iron pipe with push-on or mechanical joints may be compact fittings conforming to ANSI/AWWA C153/A21.53. Joints shall be mechanical joints conforming to the requirements of ANSI/AWWA C111/A21.11.

6. Fittings for flanged ductile iron pipe shall conform to the requirements of ANSI/AWWA C110/A21.10 (including appendix) and shall have a pressure rating of 250 psi. Fitting flanges shall conform to the requirements of ANSI/AWWA C110/A21.10. Gaskets for flanged joints shall be full face of first quality red rubber, 1/8-inch thick.

B. Coatings and Linings:

1. Exposed piping shall have exterior rust inhibitive primer coating compatible with finished paint.
2. All ductile iron pipe and fittings for underground installation shall receive an exterior bituminous coating of 1-mil minimum thickness.
3. All ductile iron pipe and fittings shall have an interior cement-mortar lining with asphaltic seal coat in accordance with ANSI/AWWA C104/A21.4.
4. All sanitary sewer ductile iron pipe and fittings shall be lined with a 40-mil thickness coating of Protecto 401 amine cured ceramic epoxy or approved equal.
5. Where shown on the drawings or required by the City Engineer, ductile iron pipe and fittings situated in aggressive soils shall be polyethylene wrapped in accordance with ANSI/AWWA C105/A21.5. Wrappings shall be 8-mil low density or 4-mil high density, cross-laminated (HDCL) polyethylene film.

PART 3 - EXECUTION

3.1 Examination:

A. The contractor shall examine the site, trench and surrounding conditions to assure proper installation of the pipe and associated fittings.

B. The contractor shall examine pipe and fittings for any scratches or abrasions to the coating or linings, or other physical damage prior to its installation.

C. Trenches shall be inspected for proper alignment and grade. Check trench bottom to assure proper clearance from other utilities, pipelines or existing structures.

D. Any bedding required by the drawings or specifications shall be installed prior to pipe placement.

3.2 Installation:

A. Pipe installation shall be according to this section of the specification and the manufacturer's instructions and/or referenced specifications.

B. Every care shall be taken in the handling, cutting, and laying of pipe and fittings to avoid damaging the interior or exterior coating. Damaged or defective areas shall be repaired or replaced to the satisfaction of the Engineer.

C. Any ductile iron fitting showing a crack, any fitting or pipe which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the job site. In any pipe showing a distinct crack and in which it is believed there is no incipient fracture beyond the limits of the visible crack, the cracked portion, if so approved, may be cut off by and at the expense of the Contractor before the pipe is laid so that the pipe used may be perfectly sound. The cut shall be made in the sound barrel at a point at least 12 inches from the visible limits of the crack. Except as otherwise approved, all cutting shall be done with a machine having rolling wheel cutters or knives adapted to the purpose. All cut ends shall be beveled and shall be examined for possible cracks caused by cutting. Special care shall be taken to avoid excessive heat during cutting which might damage pipe lining.

D. Each section of ductile iron pipe shall be placed in the prepared trench with the full length of the barrel resting upon the pipe bed and with the pipe bell over a bell hole excavated at the proper location to accommodate the bell. No temporary supports under the pipe such as bricks, rocks, etc., shall be permitted.

E. Any pipe found defective shall be replaced. Cracked pipe may be cut as specified previously in this section if authorized by the Engineer.

F. Pipeline shall be laid with bells in direction of laying, unless it is necessary to do otherwise to make connections to existing pipe. Where pipe is to be laid on a slope, the direction of laying shall be from downstream to upstream.

G. All lumps, blisters, and excess coating shall be removed from the socket and plain ends of each pipe, and the outside of the plain end and the inside of the bell shall be wiped clean and dry and be free from dirt, sand, grit, or any foreign material before the pipe is laid. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. During laying operations, no debris, tools, clothing, or other materials shall be placed in the pipe.

H. As each length of pipe is placed in the trench, the joint shall be assembled and the pipe brought to correct line and grade as shown on the drawings.

I. Assembly of ductile iron push-on joints and mechanical joints shall be in accordance with AWWA Specifications C600, Section 3.4. The contractor shall use particular care in cleaning the socket, plain end and gasket. Mechanical joint bolts shall be tightened to the proper torques shown in Table 4, AWWA Standard C600.

J. Deflections of ductile iron pipe having mechanical joints, if authorized by the Engineer, shall not exceed the deflection limits shown in Table 6, AWWA Standard C600. All bolts and set screws shall be checked immediately before backfilling.

K. Deflections for push-on joint pipe shall conform to Table 5 of AWWA C600.

L. At times when pipe laying is not in progress, the open ends of pipe shall be closed by the use of pipe plugs or other methods approved by the Engineer to keep mud, water, and other debris out of the pipe.

M. Pipe cutting for the insertion of valves and fittings shall follow the manufacturer's recommendations. No torch cutting shall be allowed. Interior and exterior coatings shall be repaired and touched-up per manufacturer's recommendations.

N. Trenches shall be backfilled according to Section 2250 - Trenching, Backfill and Compaction.

END OF SECTION

SECTION 02607 – PRECAST CONCRETE MANHOLES AND COVERS

PART 1 - GENERAL

1.1 Section Includes:

A. This section of specifications covers the material and installation requirements for precast concrete manhole sections with tongue-and-groove joints, masonry transition to manhole frame, covers, anchorage and accessories.

B. The testing requirements for materials, in-place, specified under this section shall conform to Section 02722 – Sanitary Sewer System.

1.2 Related Sections:

A. Section 02250 – Trenching, Backfilling, and Compaction
B. Section 02722 – Sanitary Sewer System

1.3 References:

A. ASTM A48 – Standard Specification for Gray Iron Castings.
B. ASTM C443 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
C. ASTM C478 – Standard Specification for Precast Reinforced Concrete Manhole Sections.
D. ASTM C923 - Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes.
E. International Masonry Industry All-Weather Council (IMIAC): Recommended Practices and Guide Specification for Cold Weather Masonry Construction.

1.4 Qualifications:

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum of five years documented experience.

1.5 Environmental Requirements:

A. Masonry construction shall not be performed when ambient temperatures are 40-degrees F. and falling unless provisions for heating and protecting the work are approved. Protect new masonry from freezing for 48-hours after completion of the masonry work.

PART 2 - PRODUCTS

2.1 Materials:

A. Precast Manhole Base and Sections:

1. All precast manholes shall be new, unused manholes delivered directly from the manufacturer to the job site. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the outside of the barrel.

2. Precast concrete manholes shall be of reinforced concrete manhole sections conforming to the requirements of ASTM C478. The concrete when tested in compression shall not be less than 4000 psi and absorption shall not exceed 9%.

3. Precast manhole base and sections shall be a minimum of 48-inches inside diameter. Precast manhole base shall have a minimum wall thickness of 5 inches and minimum bottom thickness of 6 inches. Minimum wall thickness of the manhole riser sections shall be 5 inches for 48" I.D. sections, 6 inches for 60" I.D. sections, and 7 inches for 72" I.D. sections.

4. Manhole base riser, riser, transition, and cone sections shall have offset tongue and groove joints and shall be made watertight with prelubricated rubber gaskets conforming to ASTM C443 and butyl sealant waterstops. Pre-lubricated gaskets shall be Tylox Superseal as manufactured by Hamilton-Kent; butyl sealant waterstop shall be Conseal CS-231, in widths as recommended by the manufacturer.

5. Manholes shall be assembled with the fewest number of sections to makeup the required height, thereby reducing the number of joints. The use of more than one riser section of 16 inches or less shall be prohibited. The Engineer may require that any manhole not composed of the minimum number of sections be replaced.

6. Precast eccentric cone shall be provided at top section of manhole. Eccentric cone shall have the same reinforcing as manhole base and sections. Cone sections shall be made with a minimum 5-inch wall thickness at the bottom and 8-inch wall thickness at the top. Where watertight manhole frame and covers are indicated on the drawings, cone sections shall be supplied with four (4) stainless steel anchor bolts.

7. Two lift holes shall be cast into each cone or riser section for purposes of handling and placement.

8. Openings for inlet and discharge sewer pipes shall be provided in the manhole base section and in the riser section for drop manholes. Openings shall be at positions and elevations as indicated on the plans, and may be cast into the manhole wall or mechanically cored at the manufacturing facility. Openings shall be sized to accommodate the flexible manhole sleeve.

B. Precast Concrete Adjusting Rings:

1. Provide precast concrete adjusting rings, as required, between top of eccentric cone and finished grade.

2. Precast concrete adjusting rings shall be of same materials of construction as manhole bases and sections, grooved top and bottom.

3. Adjusting rings shall be 3 or 4 inches high by 5 inches thick. Maximum combined height of adjustment rings shall be limited to 12 inches.

C. Flexible Manhole Sleeves:

1. Flexible manhole sleeves suitable for use in precast or cored openings utilizing premolded shapes positioned with expansion rings shall comply with the requirements of ASTM C923 and shall be manufactured by Kor-N-Seal or approved equal. Flexible connectors shall be installed as recommended by the manufacturer.

D. Manhole Steps:

1. Manhole steps shall be Copolymer Polypropylene Plastic Coating over 1/2-inch minimum Grade 60 steel reinforcing, 12-inches wide, with slip resistant surface.

2. Manhole steps shall conform to ASTM C478 as manufactured by M.A. Industries, Model PSI-PF, or equal. Steps shall be centered under the manhole cover opening and be vertically aligned on 16-inch centers.

E. Manhole Frames and Covers:

1. Manhole frames and covers shall be close-grained, cast-iron, smooth, clean, free of blisters, blowholes and other defects and conform to ASTM A48, Class 30B. Plane or grind bearing surfaces to ensure a flat, fine surface. Castings judged to be defective by the Owner or Engineer will be rejected and shall be replaced by the Contractor.

2. Covers and frames shall be "Heavy-Duty" type, rated for a minimum of H-20 loading. Covers and frames shall be made in the United States.

3. Manhole covers shall be cast with two non-penetrating type pick holes. Covers shall not have vent holes.

4. Manhole frames and covers shall be of either Standard Type (non-bolted) or Watertight Type (bolt-down), as indicated on the drawings. If not indicated, manhole covers shall be standard type. In locations where the manhole rim elevation is below the 100-year flood elevation, manhole frame and covers shall be Watertight Type.

5. Manhole frames and covers shall conform to the manufacturer dimensions required by the City of Northport and shown on the Drawings.

6. When watertight frames are required, manhole joints shall be supplied with 3" x 16" x ½" bitumastic-coated steel strap anchors and bolts as shown on the Drawings.

F. Non-Shrink Grout

1. Non-shrink grout shall be used to seal openings in the manhole base and riser sections such as lift holes and around flexible sleeve connections as shown on the standard details. Non-shrink grout shall be Thoro WaterPlug or approved equal.

2. Surface preparation, mixing and application shall strictly adhere to manufacturer's recommendations.

PART 3 - EXECUTION

3.1 Excavation and Backfill:

A. Perform excavation to lines and grades established by the Drawings. Construct excavation a minimum of two (2) feet in diameter larger than the outside dimensions of the manhole base and sections.

B. If material in bottom of excavation is unsuitable for supporting manhole, excavate unsuitable material to a depth specified by the Engineer and backfill resulting void with Alabama Department of Transportation No. 57 crushed limestone.

C. Backfill around manholes constructed in paved areas or areas to be paved with Alabama Department of Transportation 825, Type "A". Compact backfill in 8-inch loose lifts to minimum density of 95% Standard Proctor Density with vibratory compaction equipment.

D. Backfill around manholes in unimproved areas and lawns with native materials, compacted in 8-inch loose lifts to minimum density of 95% Standard Proctor Density.

3.2 Granular Base:

A. Remove standing water from excavation. Place 12-inches minimum of Alabama Department of Transportation #57 stone and compact with vibratory compaction equipment.

B. Excavations deeper than 12-inches below required grade of manhole base, not approved by the Engineer, shall be filled with Alabama Department of Transportation No. 57 crushed limestone and compacted by vibratory compaction equipment at no additional cost to the Owner.

3.3 Placing Manhole Base and Sections:

A. Manholes shall be constructed to the sizes, shapes, dimensions, and at the locations shown on the plans.

B. Precast manhole bases shall be set plumb and true to the lines and grades specified by the plans. Manholes out of plumb in excess of 1/4-inch in eight (8) feet shall be reset.

C. Clean ends of manhole sections of foreign materials and inspect ends for damage.

D. Place prelubricated gasket into recess. Place butyl sealant waterstop. Follow gasket and waterstop manufacturers' installation instructions. Set manhole section.

E. When new openings are required in existing manholes, openings shall be core drilled.

F. Install flexible manhole sleeves on pipes at the precast or core drilled openings according to manufacturer's recommendations. Grout around flexible sleeve as shown on the Drawings.

G. Seal lifting holes and flexible manhole sleeves in manhole on the interior and exterior with non-shrink grout to divert infiltration.

3.4 Manhole Invert:

A. Manhole inverts shall be constructed of cement mortar and shall have the same cross-section as the invert of the sewers which they connect. The manhole invert shall be carefully formed to the required size and grade by gradual and even changes in sections. Changes in direction of flow through the sewer shall be made to a true curve with as large a radius as the size of the manhole will permit.

B. For pipe diameters less than 48 inches, a bench shall be constructed on each side of the flow channel. The bench shall slope one (1) inch per foot. Bench shall be made of non-shrink grout.

C. Where the difference in the invert elevation of two or more sewers 18-inches in diameter or smaller intersecting in one manhole is 2-feet or more, a drop manhole shall be constructed in the manner shown on the Drawings. They shall be similar in construction to the standard manhole except that a drop connection of pipe and fittings of the proper size and material shall be constructed outside the manhole and supported by 3,000 psi concrete. The manhole and drop connection shall be placed on a 12-inch reinforced concrete foundation base. The drop connection piping assembly shall be bolted to the barrel of the manhole riser. Drop connection piping shall be ductile iron.

D. When manholes are constructed over existing sewers and a full section of pipe is through manhole, break out top section of pipe and cover exposed edges of pipe with grout.

3.5 Manhole Frames and Covers:

A. Install manhole frames and covers with top surface adjoining surrounding grade in improved areas, or 18 inches above grade in unimproved areas. Where manholes are constructed in paved areas, the top surface of the frame and cover shall be tilted so as to conform to the exact slope, crown and grade of the existing pavement adjacent thereto. Set manhole frames at the required elevation in a full bed of grout for provide proper bonding to cone section and/or concrete adjusting rings.

B. Where manhole frame elevation requires adjustment, precast concrete adjusting rings shall be used. A minimum 1/4-inch bed of non-shrinking grout shall be placed between the manhole cone section and the adjusting ring. Same grout thickness shall be provided in between adjusting rings when multiple rings are necessary. Butyl sealant waterstop shall be placed beneath the frame and in between each concrete adjusting ring as shown on the drawings. Butyl sealant shall be Conseal CS-231.

C. Manhole frame shall be positioned concentrically above the precast cone section or adjusting rings and set in a full bed of non-shrinking grout. A thick ring of non-shrinking grout extending to the outer edge of the precast cone section or adjusting ring shall be placed all around and on top of the manhole frame. The non-shrinking grout shall be smoothly finished and have a slight slope to shed water away from the frame and cover.

D. Check manhole cover for fit in frame. If a manhole cover is either excessively loose or tight in the frame, or rocks, wobbles, or moves in the frame, the frame and cover shall be removed and replaced by the Contractor.

3.6 Manhole Height Adjustment

A. Adjust height of existing manholes at locations shown on the Drawings. Height adjustment may include lowering or raising the existing manhole.

B. For manholes located in the roadway or sidewalk, height shall be adjusted such that the rim and cover are flush with the proposed pavement or concrete. For manholes located in non-paved areas, height shall be adjusted such that the rim and cover are 6" above the proposed grade.

3.7 Protective Coatings

A. Where shown on the drawings or directed by the Engineer, manholes shall be protected from corrosion by the use of factory applied ceramic epoxy linings.

B. Epoxy coating shall be an amide cured ceramic epoxy, Permite PCS-9043 Type II or approved equal. The epoxy shall be applied to a 40 mils dry film thickness on the inside of the structure per the manufacturer's recommendations.

END OF SECTION 02607

SECTION 02612 - REINFORCED CONCRETE PIPE

PART 1 - GENERAL

1.1 Materials

A. Concrete pipe used for sanitary sewers shall be tested under and comply with ASTM Specification C-76, except as modified herein. All concrete pipe shall have bell and spigot joints suitable for installation with rubber "o-ring" gaskets and with a rectangular groove in the spigot end to receive the rubber gasket and contain the deformed gasket on all four sides when the joint is complete.

B. Concrete sewer pipe shall be Class III, 4000 psi minimum for depth of cover of 10 feet or less; Class IV, 4000 psi minimum for cover greater than 10 feet and less than 20 feet; Class V, 6000 psi minimum for cover of 20 feet or greater.

C. Concrete pipe shall be centrifugally cast or horizontally cast on a vibrating table or vertically cast with end ring form to accurately form the bell & spigot to true dimensions with a nominal clearance of not more than 1/8 inch.

D. Centrifugally cast pipe shall have B wall thickness. Horizontally cast or vertically cast pipe shall have C wall thickness.

E. Horizontally cast pipe shall have a flat base approximately one-half the inside diameter of the pipe in width and for the total length of the pipe barrel.

F. Concrete pipe shall be cast in laying lengths of not less than 7.5 feet.

G. Materials used in the manufacture of all concrete sewer pipe shall comply with the following ASTM Specifications: Portland Cement C-150, Type II or C-175, Type II-A, or C-205 for Blast Furnace Slag Cement; Aggregates, C-33, coarse aggregates shall be crushed limestone.

H. Joints and gaskets shall comply with AWWA Specification C-302.

I. Each joint of pipe shall have stamped thereon the class of reinforcement and the wall thickness designation.

J. Concrete pipe shall be lined with a coal tar epoxy coating with an average dry thickness of 20.0 mils. Lining shall be applied in two (2) coats, at a rate of 145 to 155 square feet per coat, to achieve a minimum of eight (8) mils per coat dry thickness.

K. All interior surfaces of the pipe shall be sandblasted and properly cleaned to remove all foreign matter, dust, dirt, and loosely bonded concrete.

L. Pipe shall be aged a minimum of seven(7) days prior to lining application.

M. The Engineer, upon completion of the job, will require a certificate from the manufacturer that the required amount of coatings were purchased to adequately coat the pipe on the job.

1.2 Installation

A. Concrete sewer pipe shall be properly cured, as previously specified, and shall not be installed in less than 14 days after curing is complete.

B. Rubber ring gasket joints for concrete sewer pipe shall be installed according to the pipe manufacturer's specifications and recommendations. Extreme care shall be used in joining large diameter pipe to avoid damaging the rubber ring or displacing it from the proper operating position.

C. The inside of all bells and outside of all spigots shall be wiped to remove all dirt, water, or other foreign matter so that their surfaces are clean and dry when pipes are joined.

D. Rubber ring gaskets shall be uniformly coated with lubricant sealer furnished by pipe manufacturer immediately prior to pipe installation. The spigot end shall then be centered to exact line and grade and then sealed by forcing the spigot into the bell in an approved manner.

END OF SECTION 02612

SECTION 02624 - PVC GRAVITY SEWER PIPE

PART 1 - GENERAL

1.1 Materials

A. Gravity sewer pipe and fittings shall be labeled under and comply with ASTM Specification D-3034 except as modified herein. All pipe shall have bell and spigot joints suitable for a flexible elastomeric rubber gasket conforming with ASTM Specification D-3212 to provide a tight and lasting joint meeting the requirements of ASTM Specification F-477.

B. Contractor shall submit to the Engineer for approval, prior to delivery of pipe to the project site, certified copies of test reports showing that the pipe and joints meet the requirements of the specifications.

C. Pipe shall be marked in accordance with ASTM D-3034 and shall bear the National Sanitation Foundation seal of approval.

D. Pipe shall be furnished in nominal lengths of 12.5 feet, plus or minus 1 inch, measured laying length. Not more than 5% of the pipe furnished shall be in lengths of 10 feet, plus or minus 1 inch, measured laying length.

E. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

F. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

G. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

H. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

I. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

J. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

K. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

L. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

M. Pipe shall be furnished with factory installed gaskets. Gaskets shall be made of a resilient material conforming to ASTM Specification F-477.

1.2 Installation

A. Gaskets shall be properly lubricated when joints are assembled.

B. Pipe shall be installed in accordance with the manufacturer's recommendations.

C. The interior of the pipe shall be cleaned of all foreign material as the work progresses.

D. Pipe shall be laid to the lines and grades shown on the plans.

END OF SECTION 02624

SECTION 02614 – HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

PART 1 - GENERAL

1.1 Work Included

A. High Density Polyethylene Pipe (HDPE) shall conform to and be tested under all of the requirements of ASTM Designation: F405 and F667 and AASHTO Designations: M252 and M294.

1.2 Installation

A. All installation of HDPE pipe shall conform to ASTM D-2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications unless otherwise amended in these specifications.

B. All HDPE pipe shall be installed on a crushed stone cushion placed the entire trench width.

C. Where high water tables, flowing water or unstable soil conditions are encountered, crushed stone cushion shall be placed to the top of the pipe.

D. The inside of all bells and outside of all spigots shall be wiped to remove all dirt, water, or other foreign matter so that their surfaces are clean and dry when the pipes are joined.

E. Pipe manufacture's guidelines for pipe installation should be adhered to.

F. Trenching, backfill, and compaction shall conform to Section 02250 of these Specifications.

1.3 Payment

A. Payment for HDPE Gravity Sewer shall be per linear foot of pipe installed. All materials, equipment and labor required to lay the pipe will be considered incidental.

END OF SECTION 02614

SECTION 02622 - POLYVINYL CHLORIDE GRAVITY SEWER PIPE

PART 1 - GENERAL

1.1 Section Includes:

A. This section of specifications covers the material requirements for polyvinyl chloride (PVC) pipe, fittings, and laterals for use in gravity sewer applications.

B. The installation requirements for pipe specified under this section shall conform to Section 02250 – Trenching, Backfill and Compaction.

C. The testing requirements for materials, in-place, specified under this section shall conform to Section 02722 – Sanitary Sewer System.

1.2 Related Sections:

A. Section 02250 – Trenching, Backfill and Compaction
B. Section 02722 – Sanitary Sewer System

1.3 References:

A. ASTM D1784, latest revision, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
B. ASTM D3034, latest revision, Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
C. ASTM D2412, latest revision, External Properties of Plastic Pipe by Parallel Plate Loading.
D. ASTM D3212, latest revision, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
E. ASTM F477, latest revision, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
F. ASTM D2321, latest revision, Standard Recommended Practice for Installation of Flexible Thermoplastic Sewer Pipe.
G. AWWA C900 – Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings, 4 inches–12 inches, for Water Distribution.

1.4 Quality Control and Assurance:

A. All pipe and fittings shall be inspected at the factory and on the job site. The pipe shall be homogeneous throughout and free from cracks, holes, foreign inclusions, or other defects. The pipe shall be as uniform in color as commercially practical. PVC pipe shall have a ring painted around the spigot ends in such a manner as to allow field checking of setting depth of pipe in the socket.

B. PVC sewer pipe shall be marked with the manufacturer's name, production lot number, ASTM designation, PVC cell classification or material code, dimension ratio or standard dimension ratio, and the nominal diameter. All PVC pipe shall be manufactured in the United States.

C. All PVC pipe shall be new and unused and properly stored at the manufacturer to prevent degradation of the pipe due the exposure to sunlight and excessive heat.

D. Pipe must be delivered to job site by means, which will adequately support it, and not subject it to undue stresses. In particular, the load shall be so supported that the bottom rows of pipe are not damaged by "egging" or crushing. Pipe shall be unloaded carefully and strung or stored as close to the final point of placement as is practical. Pipe shall not be stored outside where subject to sunlight.

E. Pipe which has been stored by the Contractor for three (3) months or longer shall not be acceptable.

PART 2 – MATERIALS

2.1 PVC Gravity Sewer:

A. PVC gravity sewer pipe shall be made from compounds conforming to ASTM D1784. PVC pipe and fittings, 8 to 12 inches in diameter, shall conform to and be tested under all of the requirements of ASTM D3034. This designation specifies minimum requirements and test methods for materials, dimensions, workmanship, flattening resistance, impact resistance, pipe stiffness, extrusion quality, and pipe marking. PVC gravity sewer shall have a wall thickness equal to or greater than SDR 26.

B. Minimum pipe stiffness (F/ ΔY) at 5 percent deflection shall be 115 for all sizes when calculated in accordance with ASTM D2412.

C. PVC sewer pipe shall be supplied in standard lengths of at least 12 feet 6 inches. Longer lengths are permitted. PVC gravity sewer pipe shall be green in color.

D. Fittings for service connections shall be of the factory made inline type conforming to the requirements of ASTM D3034 and shall have a wall thickness equal to or greater than SDR 26. Service connections shall be made with wye fittings. Saddle type fittings shall not be used.

E. All pipe and fittings shall be joined by means of an integral wall bell and spigot with a flexible watertight elastomeric seal. Joint material and testing requirements shall conform to ASTM D3212 and ASTM F477.

2.2 PVC Laterals

A. PVC service laterals for PVC sewer mains shall be of same material described in 2.01A above.

B. PVC service laterals for ductile iron sewer mains shall be AWWA C-900 pipe and shall have a wall thickness equal to or greater than DR 25.

C. Contractor shall provide an easily removable, watertight and airtight, gasketed plug at the end of the service lateral.

PART 3 – EXECUTION

3.1 PVC Gravity Sewer:

A. In addition to the requirements for installation and testing specified in Section 02722 – Sanitary Sewer System, installation of PVC gravity sewer pipe shall conform to ASTM D2321 and manufacturer's recommendations unless otherwise amended in these Specifications.

B. Trenching, backfill, and compaction shall conform to Section 02250 – Trenching, Backfill and Compaction of these Specifications.

C. The inside of all bells and outside of all spigots shall be wiped to remove all dirt, water, or other foreign matter so that their surfaces are clean and dry when the pipes are joined.

D. Immediately before joining PVC pipe, the joining surfaces shall be completely coated by brushing with the lubricant sealer furnished by the pipe manufacturer. The spigot end shall then be centered to exact line and grade and then sealed by forcing the spigot into the bell in an approved manner.

E. Pipe that has been field cut must be beveled for insertion into the gasketed joint. Bevel can be made with hand or power tool. In either case, the finished bevel should be the same as the factory bevel.

3.2 PVC Laterals

A. In addition to the requirements for installation and testing specified in Section 02722 – Sanitary Sewer System, installation of PVC laterals pipe shall conform to ASTM D2321 and manufacturer's recommendations unless otherwise amended in these specifications. Connection between service lateral and sewer main shall be watertight. PVC service laterals shall be installed for each lot and extend from the collector sewer to user's property line.

B. Trenching, backfill, and compaction shall conform to Section 02250 – Trenching, Backfill and Compaction of these Specifications.

C. A PVC-coated electronic service marker shall be located six inches above the top of the lateral just beyond the curb.

END OF SECTION 02622

SECTION 02625 - POLYVINYL CHLORIDE WATER PIPE

PART 1 - GENERAL

1.1 Section Includes:

A. This section of specifications covers materials and installation for PVC water pipe, Class 200, for pipe 2 inches or less and AWWA C900 for pipe 4 inches and larger.

1.2 Related Sections:

A. Section 02250 - Trenching, Backfill and Compaction
B. Section 02600 - Ductile Iron Pipe and Fittings
C. Section 02660 - Water System

1.3 Unit Prices:

A. PVC water pipe shall be paid for by the linear foot. Payment shall include all trenching, bedding, backfill, materials, labor and equipment.

1.4 References:

A. ASTM D2241, ASTM Standard for Polyvinyl Chloride (PVC) Plastic Pipe (SDR-PR).

B. ASTM D1784, Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compound.

C. ASTM D2152, Test for Quality of Extruded Polyvinyl Chloride (PVC) Pipe by Acetone Immersion.

1.5 Submittals:

A. The contractor shall submit to the Engineer in accordance with Section 01300 of these Specifications the following items:

1. Product Data (catalog cuts, manufacturing data, etc).
2. Manufacturer's certification as to compliance with all tests as outlined in ASTM D2241.
3. Manufacturer's installation instructions.

1.6 Delivery, Storage And Handling:

A. The contractor shall check all PVC piping for damage during shipment prior to unloading. All pipe shall be completely covered during transportation.

B. The contractor shall rotate stored piping so that old piping is used first.

C. All piping shall be handled with care to avoid damage to piping.

D. Piping split, cracked or otherwise damaged shall be removed from the jobsite.

PART 2 - PRODUCTS

2.1 Materials:

A. PVC water pipe shall conform to ASTM D1784 and be manufactured from PVC compounds that equal or exceed classes PVC 12454-B, PVC 12454-C, or PVC 14333-D as defined in ASTM D1784.

B. Gaskets shall conform to ASTM D1869 for potable water and AWWA standards for fire lines.

2.2 Manufacture:

A. All PVC water pipe shall be manufactured according to ASTM D1784.

B. All PVC pipe shall be acetone tested in accordance with ASTM D2152.

C. All PVC pipe shall withstand a hydrostatic pressure of 200 psi with a SDR of 21.

D. All PVC water pipe shall be manufactured in the United States.

E. All PVC pipe shall be marked in accordance with ASTM D2241 to indicate manufacturer's name, material designation code, nominal pipe size, SDR, pressure rating in psi for water at 73 degrees F., ASTM Designation D2241, and the National Sanitation Foundation Stamp of Approval for use in potable water systems.

2.3 Manufacturer's Testing:

A. All PVC piping shall be subject to the sustained pressure test, burst pressure test and flattening test as defined in ASTM D2241.

B. Test specimens shall come from the same lot and same manufacture run as the pipe being furnished.
C. Certified copies of all test reports shall be submitted to the Engineer.

PART 3 - EXECUTION

3.1 Examination:

A. The contractor shall examine all piping and inspect for damage prior to pipe placement.

B. The contractor shall examine the pipe trench for rocks, stones, and other objects that would damage the piping.

3.2 Installation:

A. Trenching, backfill and compaction shall conform to Section 02250 of these specifications and to ASTM D 2774.

B. The trench bottom shall be excavated for pipe bells.
C. Pipe shall be inspected and all dirt and debris removed prior to joining.

D. Spigot ends of pipe shall be cleaned and lubricated with lubricant supplied by the manufacturer.

E. The spigot end shall be inserted into the bell end to the reference mark.

F. Valves shall be installed according to Section 02662 of these specifications.

G. A metallic tape or wire shall be installed in the same trench with all PVC pipe for use as pipe detection. Wire shall be 14-gauge TW solid copper. Wire shall be joined by wire nuts and connected to all valves to form a continuous circuit.

H. Pipe shall be disinfected, flushed and tested in accordance with Section 02660 of these specifications.

I. Thrust blocking shall conform to Section 02729 of these specifications.

J. All taps shall be made using a double strap tap saddle.

END OF SECTION 02625

SECTION 02660 - WATER SYSTEM

PART 1 - GENERAL

1.1 Section Includes:

A. This section of specifications shall cover the testing, disinfection and general installation requirements for a potable water system and/or line.

1.2 Related Sections:

A. Section 02250 - Trenching, Backfill and Compaction
B. Section 02600 - Ductile Iron Pipe and Fittings
C. Section 02662 – Resilient Seated Gate Valves
D. Section 02664 - Valve Boxes and Vaults
E. Section 02668 - Fire Hydrants
F. Section 02670 – Backflow Prevention

1.3 Unit Prices:

A. No separate payment shall be made for flushing, testing, disinfection or other items specified in this section. All costs associated with this section shall be considered incidental to the pipe.

1.4 References:

A. AWWA C300 AWWA Standard for Hypochlorites

B. AWWA C301 AWWA Standard for Liquid Chlorine

C. AWWA C600 AWWA Standard for the Installation of Ductile Iron Water Mains and their Appurtenances.

D. AWWA C651 AWWA Standard for Disinfecting Water Mains

E. AWWA C900 AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch, for Water.

1.5 System Requirements:

A. The Contractor shall furnish a complete and operable water system, installed according to the standards and accepted practices for waterline construction. These specifications and references specifically called for in these specifications shall be considered minimum, other incidental items may be necessary to construct a complete and operable water system.

B. The water system shall be free of leakage as defined in Section 02660, Part 3.2, Paragraph B.6 and ready for use by the Owner upon final acceptance.

1.6 Regulatory Requirements:

A. The Contractor shall familiarize himself with the regulatory requirements of the following governing agencies. Any deviations specified in these specifications from these agency requirements shall be promptly brought to the attention of the Engineer.

1. Alabama Department of Environmental Management
2. The Owner
3. Local Water Works Department
4. American Water Works Association

1.7 Site Conditions:

A. The Contractor shall familiarize himself with existing conditions & special site requirements of the job.

B. Any street cuts or crossings shall be coordinated with the Owner and/or Owner's Representative. Any and all traffic control measures specified shall be incorporated by the Contractor.

C. Street cuts or crossings along or across State of Alabama Department of Transportation Right-of-Way shall follow the guidelines and requirements of the Alabama Manual on Uniform Traffic Control Devices.

D. The Contractor shall contact the City of Tuscaloosa Water Works Department concerning the use of water to be used in the flushing, pressure testing, and disinfection if project is associated with the City of Tuscaloosa Water System.

E. The Contractor shall take appropriate measures to control the disposal of water used in the testing, flushing and disinfection of water lines. The Contractor shall adequately protect streets and adjacent property from the discharge of this water. Any damages shall be borne by the Contractor. Water used for disinfection may contain high concentrations of chlorine. Any environmental damage to lakes or streams shall be the sole responsibility of the Contractor.

F. The Contractor shall coordinate with the Engineer and water works officials on the timing of all tests, flushing and disinfection of all water lines.

G. The Contractor shall coordinate with the Engineer and water works officials on all tie-ins to existing system lines and valves.

PART 2 - PRODUCTS

2.1 Manufacturers:

A. All manufacturers of equipment used in the water line and/or system shall be experienced in the manufacture of such equipment for the water industry.

B. Equipment of like nature shall be of the same manufacturer as to maintain standardization of operation, maintenance, spare parts and manufacturer's service.

2.2 Equipment and Materials:

A. All equipment used in the water system shall be new and unused, first quality and from established manufacturers.

B. Equipment shall meet the requirements of the related sections of these specifications and associated governing agency.

2.3 Testing Equipment:

A. The Contractor shall have on hand proper testing apparatus and associated accessories prior to beginning any tests. All fittings, piping, pressure gauges and pumps shall be in proper working order.

PART 3 - EXECUTION

3.1 Thrust Blocking:

A. All pressure pipe 2-inches in diameter and over shall be provided with thrust restraints. Thrust restraints shall consist of concrete thrust blocks and/or mechanical restraining rods and attachments shall be furnished at all hydrants, valves, fittings, plugs, and pipe bends.

B. The bearing area for concrete thrust blocking shall conform to 24-hour test. Special blocking detailed in the Construction Plans shall supercede these requirements.

C. Concrete used in thrust blocking shall have a minimum compressive strength of 2000 psi in 28-days.

D. The concrete blocking shall be placed in such a way to contain the thrust force and still maintain accessibility of the pipe and fittings for repair. Nuts, bolts, glands, etc. shall be free of concrete. No separate payment shall be made for concrete blocking or thrust restraint.

E. Fire hydrants shall be restrained as detailed in the Construction Plans.

F. All restraining rods, clamps, and accessories shall be coated with a bitumastic coating before and after installation. The surface shall be cleaned thoroughly and the bitumastic coating applied as per manufacturer's recommendations.

3.2 Testing:

A. Flushing:

1. Prior to beginning the pressure test, the water line shall be flushed to remove any dirt and debris trapped in the line. All valves shall be partially opened and closed during the flushing process.

2. All mains shall be flushed with a velocity of at least 2.5 feet per second as specified by the Alabama Department of Environmental Management.

B. Hydrostatic Pressure Test:

1. The Contractor shall coordinate with the Owner and slowly fill the section of line to be tested with water. The line shall then be pressurized to 1.5 times the working pressure of the line, but in no case less than 150 psi. The working pressure shall be as defined by the Owner.

2. Trapped air shall be expelled at all valves and hydrants. High points in the line without access to a valve or hydrant shall be tapped and a corporation stop installed. Upon completion of the test, the corporation stop shall be left in place. A copper line shall be installed from the corporation stop to a curb stop and a meter box installed.

3. Upon complete removal of all air entrapped in the line, the line shall be again filled with water and pressurized and testing begun. Duration of the test shall be two hours for uncovered pipe and six hours for covered pipe. The test pressure shall not vary by + or - 5 psi during the duration of the test.

4. A recording pressure gauge shall be installed and pressure fluctuations recorded for the duration of the test. Test charts and records shall be available to the Engineer at the end of each test.

5. All visible leaks encountered during testing shall be repaired.

6. Leakage shall not be greater than determined by the following formula:

$$L = \frac{SDP^{1/2}}{133{,}200}$$

L = Leakage in gallons per hour
S = Length of tested pipe (ft.)
D = Diameter of pipe (in.)
P = Average test pressure during the duration of the test (P.S.I.)

7. Leakage in excess of that determined by the above formula shall be repaired at the expense of the Contractor. The leakage test shall then be repeated until the project complies with the allowable leakage.

C. Disinfection:

1. After a successful pressure test has been achieved, the waterline shall be chlorinated for the purpose of disinfection.

2. The Contractor shall use the hypochlorite continuous feed method for chlorine application as specified in AWWA Standard C651.

3. Chlorine solution shall be introduced to achieve a concentration of at least 50 mg/l in all parts of the line.

4. The chlorine solution shall be allowed to remain in the pipe for a period of not less than 24-hours at which time the chlorine concentration shall be not less than 25 mg/l.

5. All pipe and appurtenances shall be flushed with clean water until the chlorine residual is reduced to 1 mg/l or less until compatible with the existing system. The Contractor shall not flush any lines unless the local Water Department is present.

6. Bacteriological samples shall be collected in sterile jars by the Contractor.

7. The Owner shall perform the water analysis. All costs associated with the disinfection shall be borne by the Contractor, except sample collection and analysis for one set of sampling which shall be paid for by the Owner.

8. The water line and appurtenances shall not be placed in service until an acceptable laboratory analysis has been completed.

9. If the initial disinfection fails to produce satisfactory samples, disinfection as required above shall be repeated by the Contractor at his expense until satisfactory samples have been obtained.

3.3 Existing Utility Crossings:

A. Water mains paralleling existing sanitary sewers shall be positioned a minimum of 5-feet horizontally from the sewer.

B. If insufficient space is available to maintain the 5-foot separation, the bottom of the waterline shall be placed a minimum of 18-inches above the top of the sewer.

3.4 Protection:

A. The Contractor shall maintain and protect the completed water line until final acceptance by the owner. Any damages to the line shall be repaired by the Contractor prior to acceptance.

END OF SECTION 02660

SECTION 02662 – RESILIENT SEATED GATE VALVES

PART 1 - GENERAL

1.1 Summary:

A. This section covers materials, installation and performance criteria for resilient seated gate valves, including tapping valves and sleeves, to be used in water and sewer service.

1.2 Related Sections:

A. Section 02250 - Trenching, Backfill and Compaction.
B. Section 02664 - Valve Boxes and Vaults.

1.3 Unit Prices:

A. Gate Valves shall be paid for per each, if a bid item is denoted in the Bid Schedule. If a specific bid item is not denoted in the Bid Schedule, payment for resilient seated gate valves shall be included in the stated lump sum bid amount. Payment, in either case, shall be based on a complete, installed and operable valve with valve box and concrete support considered incidental to the installation of gate valve. This payment shall include compensation for all appurtenances, materials, labor, etc. necessary to complete the work. **(N/A – Lump Sum Contract)**

B. Hot Tap with Tapping Valve and Sleeve shall be paid for per each, if a bid item is denoted in the Bid Schedule. If a specific bid item is not denoted in the Bid Schedule, payment for Hot Tap with Tapping Valve and Sleeve shall be included in the stated lump sum bid amount. Payment, in either case, shall be based on a complete, installed operable tapping valve with sleeve, valve box and concrete support considered incidental to the installation of gate valves. This payment shall include compensation for all appurtenances, materials, labor, etc. necessary to complete the work. **(N/A – Lump Sum Contract)**

1.4 References:

A. AWWA C509 American Water Works Standards for Resilient Seated Gate Valves for Water Supply Service.

B. AWWA C515 American Water Works Standards for Reduced-Wall Resilient Seated Gate Valves for Water Supply Service.

C. AWWA C550 American Water Works Standards for Protective Epoxy Interior Coatings for Valves and Hydrants.

D. AWWA C600 American Water Works Association Standard for Installation of Ductile-Iron Water Main and their appurtenances.

1.5 Submittals:

A. The contractor shall furnish detail assembly drawings, specifications, catalog data and dimensions, and 5 sets of operating instructions for all gate valves.

1.6 Quality Assurance:

A. The contractor shall supply to the engineer an affidavit from the manufacturer that all gate valves 2-inches and larger conform to AWWA C509 or AWWA C515 and that all tests specified therein have been performed and all test requirements have been met.

B. The contractor shall supply to the Engineer an affidavit of compliance from the manufacturer that all gate valves smaller than 2-inches conform to Federal Specification WW-V-54 and have a pressure rating of 200 psi minimum.

1.7 Delivery, Storage And Handling:

A. Packing and Shipping:

1. Markings shall be cast on the bonnet or body of each valve conforming to AWWA C509 or AWWA C515.
2. Valves shall be packaged for shipment to avoid damage during shipping and handling. All gate valves shall be completely drained and closed prior to shipment.

B. Acceptance at Site:

1. Gate valves shall be thoroughly checked at the site prior to unloading. Any valves found defective or damaged during shipment will be rejected.
2. The contractor shall provide adequate lifting equipment to unload large valves. In no case should valves be dropped.
3. Chains, hoists or other lifting devices should not be fastened around bypasses, yokes, gearing, motors, stems or handwheels. Valves shall not be lifted by the stem.

C. Storage and Protection:

1. Valves should be stored in a closed position and protected from rain, dirt and debris by covering or storing indoors. In freezing weather the contractor shall take steps to assure valves do not freeze.
2. Rubber gaskets for joints shall be stored in a cool, dry place out of direct sunlight. Avoid contact between petroleum based substances and rubber gaskets.
3. Gate valves shall be stored such that the resilient coating on the interior of each valve is not exposed to direct sunlight for extended periods of time. In addition, each valve shall be stored to avoid exposing the epoxy interior coating to nicks and abrasions.

1.8 Scheduling:

A. The contractor shall schedule deliveries of gate valves to assure the proper materials are on hand prior to the installation of the work.

PART 2 - PRODUCTS

2.1 Approved Manufacturers:

A. American Darling Valve Company.
B. Clow.
C. Mueller.
D. M & H

2.2 Equipment:

A. Gate valves 4-inches through 12-inches:

1. Gate valves shall conform to AWWA C509 or AWWA C515.
2. Gate valves shall be iron-bodied, resilient wedge unless otherwise noted.
3. Operating nuts shall be 2-inch in size and operate counter clockwise to open the valve.
4. Gate valves shall be mechanical joint if buried and flange joint if located inside or attached to structures. Retainer glands shall be used with mechanical joints unless otherwise specified.
5. Valves shall be non-rising stem type, unless specifically denoted otherwise.
6. The interior coating shall be fusion bonded epoxy conforming to AWWA C550.
7. The iron valve body shall be hydrostatically tested to 500 psig and the completed valve shall be bubble tight to 250 psig.

B. Gate Valves 2-inch and smaller:

1. Gate valves shall be bronze, Stockham B103, or equal.
2. Gate valves shall conform to Federal Specification WW-V-54, Class 150.
3. Gate valves to have non-rising stem - inside screw type solid wedge disc.
4. Gate valve body, bonnet and disc to be bronze, meeting ASTM Specifications B-62.
5. Packing nut and stuffing box to be bronze, meeting ASTM Specifications B-584.
6. Packing gland to be brass.
7. Handwheel to be malleable iron, meeting ASTM Specifications A-197.
8. Handwheel nut to be steel.
9. Full port opening - disc to recess completely into bonnet.
10. Packing to be non-asbestos Kevlar with Teflon.

C. Gate Valves 14-inch through 48-inch:

1. In general, resilient seated gate valves, 14-inch through 48-inch shall conform to the requirements for resilient seated gate valves 4-inches through 12-inches except for the requirements denoted below:

   a. Unless denoted otherwise the operating stem shall be horizontal.
   b. The operating nut shall operate a fully enclosed gear drive to operate the valve stem and open and close the valve.
   c. Gears shall be smooth running, accurately cut and made from ASTM A26 Grade U-60-30 steel.
   d. Gear ratios shall conform to Table 7 of AWWA C500.
   e. Fully enclosed gear cases designed for underground use shall be provided.
   f. The iron body shall be hydrostatically tested to 400 psig and the completed valve assembly shall be bubble tight at 200 psig.

2. Bypasses shall be provided for all valves 24-inches and larger.

   a. Bypass sizing shall conform to Table 8 of AWWA C500.
   b. Valves used for bypasses shall be non-rising stem gate valves of the same size as specified in Table 8 above.
   c. Valves used for bypass shall conform to these specifications.
   d. Piping used in bypasses shall be ductile-iron, mechanical joint conforming to Section 02600, Ductile Iron Pipe and Fittings.

D. Tapping Valve and Sleeve:

1. All tapping Valves shall comply with AWWA Specifications C-509 for resilient seat valves and the following design specifications:

   a. All tapping valves are to be non-rising stem; open left.
   b. Tapping valves 12 inch and smaller have a working pressure of 200 psig and tested at 400 psig and tap valves 14" and larger shall have a working pressure of 150 psig and test pressure of 300 psig.
   c. All tapping valves must be furnished with "O" Ring seals.
   d. Tapping valves shall have an outlet end connection of the mechanical joint type. Inlet ends shall have an inlet flange for the attaching to a sleeve or cross. A machine projection on this flange shall be made with a machined recess in the tapping sleeve outlet flange to assure correct alignment.
   e. Seat opening of tapping valves shall be larger than the nominal size to permit full diameter cuts to be made.
   f. All valves to have tap sleeve ends complete with bolts, glands and 1/8" thick rubber gaskets.

2. Tapping sleeves shall be suitable for use on pipe with AWWA specifications C102-53, C105-53, C108-53 and the following design specifications:

   a. Tapping sleeves shall be of the mechanical joint type. The mechanical joint ends shall be sealed by neoprene gaskets, compressed tightly around mains by means of a second flange or gland bolted to the end flange of the sleeve. Gasket and its seat inside the end flange or the sleeve shall be tapered or wedge shaped. The gasket shall be totally confined to prevent cold-flow when gland is tightened.
   b. Tapping sleeves shall have a working pressure of 200 psig.
   c. The side outlet or branch connection outlet shall be machined and with a machined recess match the machined projection of the tapping valve flange to assure correct alignment.
   d. The longitudinal or side gaskets shall be of neoprene and shall be confined in a cored grove.

2.3 Fabrication:

A. Valves shall be fabricated and assembled to be well fitted and to operate smoothly.

B. Parts shall be designed and manufactured to be interchangeable between manufacturers of the same type and size.

C. Castings shall be sound and free from defects.

2.4 Source Quality Control:

A. Each gate valve shall be subjected to an operation test and hydrostatic test at the place of manufacture.

B. The contractor shall supply to the Engineer an affidavit of compliance as specified in 1.06.A and B of these specifications.

C. Operation and hydrostatic testing shall conform to applicable section of AWWA C509 or AWWA C515.

PART 3 - Execution

3.1 Examination:

A. Prior to the installation of the gate valve, the valve should be examined and inspected for compliance with these specifications and proper operation.

B. Valves that fail to comply with these specifications or operate properly shall be removed from the jobsite without compensation.

D. All gate valves shall be operated through one complete cycle by the Contractor in the presence of the Engineer to verify proper operation.

3.2 Preparation:

A. Prior to installation of the valve, the contractor shall prepare the area for valve installation by supporting the associated piping to align the valve.

B The contractor shall determine that proper materials are on hand for a complete valve installation.

C. The contractor shall review the manufacturer's installation instructions to ascertain that no unusual installation procedures are required. Should the contractor find any unusual procedures, he shall promptly report them to the Engineer.

3.3 Installation:

A. All gate valves installed underground shall be installed in a closed position.

B. Gate valves shall be installed on a firm footing and temporarily supported until a permanent support can be poured. Pipe ends should be supported to minimize bending to the valve end connections.

C. A valve box or vault shall be installed around all gate valves. The contractor shall refer to the drawings for any special vaults to be constructed. If no special vault is specified a valve box shall be installed.

D. Valve boxes and vaults shall be installed to avoid traffic and other surface loading being transmitted to the valve.

E. Valve boxes shall be centered over the operating nut with the top flush with the surrounding finished elevations.

F. Large valves installed with bypasses shall have a second valve box installed, centered over the smaller bypass valve operating nut.

G. Valves installed in deep trenches with the operating nut located six feet below the finished surface shall have stem risers provided for operation with a six-foot key.

H. Gate valves installed above ground shall be supported to avoid excessive stress and bending to the valve end connections.

3.4 Field Quality Control:

A. After installation, but prior to pressure testing, all bolts shall be checked with a torque wrench for proper torque.

B. Gate valves shall be left uncovered during hydrostatic testing to check for leaks unless test pressures are great enough to cause unstable conditions at the valve.

C. Gate valves shall not be tested at pressures greater than twice the rated working pressure of the valve.

3.5 Records:

A. The contractor shall sufficiently mark all gate valve locations and record the size, make, date of installation, and number of turns necessary to open. The contractor shall furnish the Engineer with 3 copies of such records.

3.6 Protection:

A. The contractor shall protect all gate valves from damage until final acceptance of the work.

END OF SECTION 02662

SECTION 02664 - VALVE BOXES AND VAULTS

PART 1 - General

1.1 Summary:

A. This section of specifications covers materials, installation and other incidentals pertaining to valve boxes and vaults installed around valves.

1.2 Related Sections:

A. Section 02250 – Trenching, Backfill, and Compaction
B. Section 02660 – Water System
C. Section 02662 – Gate Valves
D. Section 02666 – Service Connections
E. Section 02668 – Fire Hydrants

1.3 Omit

1.4 Submittals:

A. Valve Boxes:

1. The Contractor shall submit product data including catalog cuts, manufacturer's data and other incidental information on valve boxes.

B. Vaults:

1. The Contractor shall submit shop drawings to be approved prior to the manufacturer of all lids and covers to be installed over vaults.

1.5 Quality Assurance:

A. Valve Boxes:
1. Valve boxes shall be cast by a foundry with at least five years experience in the casting of valve boxes and covers.

B. Vaults:
1. Vaults shall be built according to detail drawings specified in the drawings. The Contractor shall construct the vaults in a neat and workmanlike manner.
2. Vault covers shall be fabricated according to the detail drawings and shop drawings approved by the Architect. Vault covers shall be fabricated in a neat and workmanlike manner.

PART 2 - PRODUCTS

2.1 Manufacturers:

A. Clow Corporation, Model No. F-2452
B. Opelika Foundry
C. Acheson Foundry
D. Mueller Company, Model No. E-2702

2.2 Materials:

A. Valve Boxes and Covers:
1. Valve boxes and covers shall be of cast-iron manufactured as a unit with all associated extensions and bases.
2. Valve boxes shall be 2 piece, screw type, with a 5-1/4" shaft.

3. Covers for valve boxes on potable water lines shall have the word "WATER" cast onto the cover. Covers for sewage valves, sludge valves, and non-potable water valves shall have the word "SEWER" cast onto the cover. Covers for natural or manufactured gas valves shall have the word "GAS" cast onto the cover.

B. Vaults:
1. Vaults shall be constructed of reinforced concrete as shown on the Drawings.
2. Vault covers shall be constructed of steel plate and angles as detailed on the drawings or of manufactured supplied items as specified on the Drawings. Steel shall be A 36, shop primed, and painted. Color shall be selected by the Owner.

PART 3 - EXECUTION

3.1 Examination:

A. Valve boxes shall be inspected prior to installation for any defects, cracks, and that all necessary parts are on hand.

3.2 Installation:

A. Valve Boxes:
1. Valve boxes shall be installed plumb, centered over the operating nut on a firm and compacted base and carefully and thoroughly backfilled.
2. Valve boxes shall be installed so as to not induce stress to the valve.
3. Valve boxes shall be installed with the top no more than 1/2-inch above finished grade. Valve boxes shall be installed with the top of the box flush with finished paving.

3.3 Protection:

A. Valve boxes and vaults shall be protected from damage until final acceptance of the work.

B. Any valve box or vault damaged prior to final acceptance of the work shall be removed and replaced with all costs borne by the Contractor.

END OF SECTION 02664

SECTION 02666 - SERVICE CONNECTIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. This Section of Specifications covers materials and installation requirements for the construction of a service line from a water meter to building.

1.2 RELATED SECTIONS:

A. Section 02250 - Trenching, Backfill and Compaction
B. Section 02660 - Water System

1.3 REFERENCES:

A. AWWA C800 AWWA Standard for Underground Service Lines, Valves and Fittings.
B. ANSI B.1.1 American National Standard for Unified Inch Screw Threads.
C. ANSI B.1.20.3 Dry Seal Pipe Threads.
D. ASTM B88 ASTM Standard for Seamless Copper Water Tube.
E. ASTM B584 ASTM Standard for Copper Alloy Sand Castings for General Applications.

1.4 SUBMITTALS:

A. The Contractor shall submit in accordance with Section 01300 the following items:

1. Product data including catalog cuts and manufacturing data.
2. Test reports as outlined in Section 3 of AWWA C800.
3. Manufacturer's Affidavit of Compliance with AWWA C800.

1.5 QUALITY ASSURANCE:

A. The Contractor shall comply with all local, state and federal codes, requirements and regulations.

1.6 DELIVERY, STORAGE AND HANDLING:

A. The manufacturer's name or trademark shall be cast on the bodies of all valves and fittings.

B. The Contractor shall thoroughly inspect all valves, fittings and service lines for damage and defects prior to and again after installation.

C. The Contractor shall store all service lines, valves and fittings in a clean, dry area and protect same from freezing and other damages.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Valve and Fitting Castings shall be made from Copper Alloy No. C83600 in accordance with ASTM B62 or ASTM B584.

B. Seals, threads, and packing shall be of materials recommended by the manufacturer that are compatible with the valve or fitting.

C. Service Line:

1. All service lines shall be Type "K" soft copper.

2.2 FABRICATION:

A. All service line valves and fittings shall conform to AWWA C800 and shall be manufactured to be first class in every respect.

B. Valves and fittings shall be free of metal chips, filings and excess lubricants.

C. Castings shall be clear and sound without defects.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Service lines shall run in the shortest and straightest possible course from the water main to the meter installation and from the meter installation to the building.

B. Jumbo standard meter boxes shall be plastic (13" x 20" x 12") as manufactured by Carson or approved equal with solid cast iron lid as manufactured by Russell Foundry, or approved equal.

C. Jumbo standard meter boxes for use in concrete shall be a (13" x 24" x 12") as manufactured by Carson, or approved equal with solid cast iron lid as manufactured by Russell Foundry, or approved equal.

D. Larger meters and detector checks shall require concrete vaults (approximately 3' x 5' in dimensions) due to their size, bypass piping, etc. There shall be no additional pay for installation of a vault versus a meter box.

END OF SECTION 02666

SECTION 02668 - FIRE HYDRANTS

PART 1 - GENERAL

1.1 Section Includes:

A. This specification covers material and installation specifications for fire hydrants and related accessories.

1.2 Related Sections:

A. Section 02250 - Trenching, Backfill and Compaction
B. Section 02600 - Ductile Iron Pipe and Fittings
C. Section 02660 - Water System
D. Section 02662 - Gate Valves
E. Section 02664 - Valve Boxes and Vaults

1.3 Omit

1.4 References:

A. AWWA C502, AWWA Standard for Dry Barrel Fire Hydrants.

B. AWWA C600, AWWA Standard for Installation of Ductile-Iron Water Mains and Appurtenances.

1.5 Submittals:

A. The contractor shall submit to the Engineer in accordance with Section 01300 of these specifications the following items:

1. Design data showing the loss of head and how this test was conducted.

2. Test reports of the mechanical test and hydrostatic test as defined in Section 5 of AWWA C502.

3. Product Data.

4. Manufacturer's Affidavit of Compliance According to Section 5.4 of AWWA C502.

B. The manufacturing process and testing shall be open to and subject to inspection and observation by the Owner's representative.

1.6 Delivery, Storage And Handling:

A. Hydrants shall be complete with all required accessories when shipped. The manufacturer shall prepare hydrants so that they will not be damaged during shipment. Hydrants shall be completely drained and closed prior to shipment.

B. The contractor shall use extreme care when unloading hydrants. Hydrants shall be inspected prior to unloading and checked for damage during shipment. Any hydrant damaged during this unloading or shipping process shall be rejected and removed from the job.

C. The contractor shall provide a dry, suitable area for storage of hydrants. Hydrants shall be protected from freezing and other damages during storage.

PART 2 - Products

2.1 Manufacturers:

A. American-Darling Valve - Mark 73
B. Mulleur Company - Centuriun
C. M & H - Model 129
D. Clow Valve Company - Medallion
E. U S Pipe Company - Metropolitan 250 M-94

2.2 Manufactured Units:

A. All fire hydrants shall consist of a hydrant, gate valve, ductile iron spools and associated accessories and be considered as a unit.

1. Hydrant:

a. Fire hydrants shall conform to AWWA C502.

b. Fire hydrants shall have a working pressure of 150 psi and be tested at 300 psi.

c. Fire hydrants shall have a 4-1/2-inch valve opening.

d. Fire hydrants shall be equipped with two 2-1/2-inch nozzles (thread NOZ GA NS) and one 4-1/2-inch nozzle (thread MOZ GA NS).

e. Fire hydrants shall open counter clockwise and be equipped with a 1-1/2-inch bronze pentagonal operating nut.

f. Fire hydrants shall be equipped with a 6-inch mechanical joint or flange joint shoe complete with gland and rubber gaskets.

g. Fire hydrants shall be equipped with a break away safety flange, brass safety stem coupling and brass safety sleeve.

h. Fire hydrants shall be equipped with double drain valves and double drain openings, "O" ring seals, bronze seat ring with compression type main valve, an oil filled reservoir and a positive stop stem.

i. Nozzle caps shall be provided with non-kinking chains.

j. All fire hydrants shall be manufactured in the United States.

2. Gate Valves shall comply with Section 02662 of these specifications.
3. Ductile iron spools shall comply with Section 02600 of these specifications.

2.3 Painting:

A. Fire hydrant interiors shall be painted to conform with AWWA C502.

B. Fire hydrant exteriors shall be painted to conform with AWWA C502 and in addition shall be painted with red enamel.

2.4 Manufacturer's Test:

A. Fire hydrants shall be subjected to the mechanical test and hydrostatic tests as outlined in Section 5 of AWWA C502.

B. Copies of these tests shall be furnished to the Engineer.

PART 3 - Execution

3.1 Examination:

A. All fire hydrants shall be inspected prior to installation for direction of opening, operating nut dimensions, tightness of all bolts, cleanliness of inlet and all defects or damage during shipping and handling.

B. Defective hydrants shall be removed from the jobsite.

3.2 Installation:

A. Fire hydrants shall be installed as shown on the plans or directed by the Engineer.

B. All hydrants shall be installed plumb with the 4-1/2 inch pumper nozzle facing the street or alley.

C. Fire hydrants where placed behind curbing shall be set back a sufficient distance to avoid car bumpers as the cars pull to the curb. Fire hydrants shall be placed 2-feet from side walks and parkways to provide safety for pedestrians.

D. Hydrants shall be set with the breakaway flange not less than 2-inches or more than 6-inches above finished grade.

E. Fire hydrants shall be connected to a supply line 6-inches in diameter or larger.

F. Fire hydrants shall be installed with a gate valve and box located a sufficient distance away from the hydrant to allow for hydrant maintenance.

G. A drainage pit 2-feet x 2-feet x 2-feet shall be excavated below the hydrant and filled with coarse graded stone or gravel to 6-inches above the hydrant opening. The drainage pit shall not be connected to or be near any sewer.

H. All hydrants shall be carefully and thoroughly backfilled.

3.3 Cleaning And Protection:

A. The contractor shall clean the area of any construction debris, excess backfill and other items.

B. The contractor shall carefully check hydrant for proper operation in the presence of the Engineer.

C. The contractor shall maintain hydrants from damage until final acceptance of the work.

END OF SECTION 02668

SECTION 02670 - BACKFLOW PREVENTION

PART 1 - GENERAL

1.1 Section Includes:

A. This Section of Specifications covers the material and installation requirements for backflow prevention devices.

1.2 Related Sections:

A. Section 02250 - Trenching, Backfill and Compaction
B. Section 02600 - Ductile Iron Pipe and Fittings
C. Section 02660 – Water System
D. Section 02666 – Service Connection

1.3 References:

A. AWWA C506 AWWA Standards for Backflow Prevention Devices. Reduced Pressure Principle and Double Check Valve Types.
B. ANSI/ASSE Spec. No. 1024

1.4 Submittals:

A. The Contractor shall submit, in accordance with Section 01300 of these specifications, product data including catalog cuts, test reports, manufacturer's installation instructions and the manufacturer's certificate of compliance with AWWA C506.

1.5 Quality Assurance:

A. Backflow prevention devices shall be tested by a laboratory recognized as having expertise in testing backflow prevention devices as required in Section 1.3 of AWWA C506 Specifications. The laboratory shall be acceptable to the Owner.

1.6 Delivery, Storage and Handling:

A. The manufacturer shall prepare each backflow prevention device for shipment so that no damage will occur during shipment.

B. All backflow preventers shall be complete in every respect and completely drained with all openings closed prior to shipment.

C. Upon receipt, the Contractor shall thoroughly examine backflow preventers for damage during shipment and store them in a clean, dry and safe area.

PART 2 - PRODUCTS

2.1 Materials:

A. Because of the threat of electrolysis, when differing metals are used, insulation and/or electrolytically similar metals shall be used throughout the construction.

B. Residential dual check valve preventers:

1. Residential dual check valve preventers shall be bronze bodied, with two acetyl resin plastic check modules, BUNA "N" Seals, stainless steel springs, and "O" ring union seals. The dual check valve preventers shall be Watts No. 7 or an approved equal. All residential dual check valve preventers shall be 3/4 inch or larger.

C. Commercial Double Check Valve and Reduced Pressure Zone Backflow Preventers:

1. Valve bodies, covers, spools and spacers shall be ASTM B61, Bronze, or ASTM A126, Class B, Gray Iron.

2. Clapper and Poppett Facing Rings shall be molded synthetic rubber with a shore durometer hardness of 35 to 45.

3. Relief Valve Facing Rings shall be molded synthetic rubber with a shore durometer hardness of 60 to 70.

4. Swing Pin and Guide Stems shall be ASTM B139, Grade A, C or D Phosphor Bronze or ASTM A 276, Type 304, Stainless Steel.

5. Springs shall be ASTM A313 Steel or ASTM B159 Phosphor Bronze.

6. Diaphragms shall be synthetic rubber with a cotton or rayon insert conforming to Federal Specification HHP-151B.

7. Seat Rings and Valve Seats shall be ASTM B61 Bronze or ASTM A276, Type 304, Stainless Steel.

2.2 Manufactured Unit:

A. Backflow Preventers shall be manufactured as a unit capable of operating at a supply pressure of 150 psi and a temperature of 140-degrees F.

B. Residential dual check valve backflow preventers shall meet or exceed ANSI/ASSE Standard 1024.

C. Double check valve and reduced pressure zone backflow preventers shall meet or exceed AWWA C506 Specification.

2. 3 Fabrication:

A. All foundry and machine work shall be first class, free of injurious defects and conform to the manufacturer's tolerances.

B. Flange joints shall be faced true and machined at right angles to their respective axes. Threaded joints shall be concentric and accurately cut free of burrs.

C. All joints shall be tested as watertight when subjected to the design pressure.

PART 3 - EXECUTION

3.1 Examination:

A. The Contractor shall examine all backflow preventers for damage prior to installation.

3.2 Installation:

A. All backflow preventers shall be installed on the consumer side of the meter.

B. Small residential backflow preventers shall be installed in the water meter box.

C. Backflow preventers greater than 2" in diameter, shall be installed as shown on the Drawings.

D. All backflow preventers shall be installed with no leakage around any joint.

E. Backflow preventers greater than 2" in diameter shall have blocking castings under them so that their weight is not supported by the adjacent piping.

END OF SECTION 02670

SECTION 02722 - SANITARY SEWER SYSTEM

PART 1 - GENERAL

1.1 Section Includes:

A. This section of specifications covers installation requirements of gravity sewer pipe and pressure sewer pipe. Testing requirements for gravity sewers, manholes, and force mains are also provided in this section.

B. All materials used in the construction of sewers shall be new and unused when delivered to the job site and shall be suitable for installation and operation under the conditions for which they are to be used.

1.2 Related Sections:

A. Section 02250 – Trenching, Backfilling and Compaction
B. Section 02600 – Ductile Iron Pipe and Fittings

PART 2 – PRODUCTS

2.1 General:

A. The Contractor shall provide all materials, equipment, and labor necessary to accomplish the work as shown or specified herein.

2.2 Materials:

A. All materials used in the construction of sewers shall be new and unused when delivered to the work and shall be suitable for installation and operation under the conditions for which they are to be used.

B. All sewer pipe and materials used in its manufacture shall be tested and inspected by an approved commercial testing laboratory prior to delivery to the site and all materials which fail to conform to these specifications shall be rejected.

C. After delivery to the site, any materials which have been damaged in transit or are otherwise unsuitable for use in the work shall be rejected and immediately removed from the site. Certified copies in duplicate of the inspection and acceptance reports of the testing laboratory shall be supplied to the Engineer prior to use of these materials.

D. Each joint of pipe delivered to the work shall be stamped or marked to indicate the testing laboratory's acceptance or approval. The cost of inspecting and testing materials shall be borne by the Contractor, and the Engineer shall approve the Laboratory. The Engineer may require laboratory tests of other materials should he consider this necessary to get such materials to comply with the specifications.

E. Certified mill test certificates will be accepted for PVC and DI pipe fittings.

PART 3 – INSTALLATION

3.1 Gravity Sewer Pipe Laying - General:

A. Before sewer pipe is placed in position in the trench, the bottom and sides of the trench shall be carefully prepared and the necessary bracing and sheeting installed.

B. Unless noted otherwise on the drawings, all gravity sewer lines shall be installed with a minimum thirty-six (36) inches of cover.

C. A properly designed and operated laser beam device may be used to align and grade the pipe. Laser beam devices used shall be carefully calibrated at intervals not to exceed 30 calendar days.

D. Air blowers must be used in conjunction with laser beam devices and must be sufficient to provide an air flow through the pipe of 4 to 6 mph.

E. If approved by the Engineer, the batter board method may be used. A mason's line shall then be tightly stretched above ground level, parallel to and directly above the axis of the pipe to be installed; this line to be supported at intervals not exceeding 50 feet. The exact line and grade for each section of pipe shall be determined by measuring down from this line to the invert of the pipe in place. Each pipe shall be accurately placed to the exact line and grade called for on the plans. The Contractor shall furnish all labor and materials necessary for erecting batter boards.

F. Water shall not be allowed to run or stand in the trench while pipe laying is in progress or before the joints are completed or before the trench has been backfilled. The Contractor shall not open up at any time more trench than his available pumping facilities are able to dewater.

G. Each piece of pipe and special fitting shall be carefully inspected before it is placed and no defective pipe shall be laid in the trench. Pipe laying shall proceed up-grade, starting at the lower end of the grade and with the bells uphill.

H. After pipe laying has begun, it shall continue progressively up-grade. No section of pipe installation will be skipped without a written request for such procedures from the Contractor and approved by the Engineer.

I. Bell holes shall be of sufficient size to allow ample room for properly making the pipe joints. Bell holes shall be cut not more than five joints ahead of pipe laying. The bottom of the trench and the crushed stone cushion between bell holes shall be carefully graded so that the pipe barrel will rest on a solid foundation for its entire length. Each joint shall be laid so that it will form a close concentric joint with adjoining pipe and so as to avoid sudden offsets and inequalities in the flow line.

J. Backfilling of trenches shall be started immediately after the pipe is in place and the joints completed and inspected by the Engineer.

K. A metallic tape or wire shall be installed in the same trench with all non-metallic pipe (PVC) in order that the pipe may be located with electronic metal detection equipment. Wire shall be T.W. 12-gauge solid copper conforming to specifications for annealed copper, ASTM B-3 and Underwriters Laboratories Thermoplastic Insulated Wire Standard No. 83, latest revision. Wire shall be Simplex BW3001, or equal. Pipe detector tape shall be two (2) inch wide minimum metalized tape. Tape shall be Griffolyn Company, Inc., Terratape 2" D., or equal. Wire and/or Tape shall be secured to pipe at intervals of 20 feet.

L. Manholes shall be installed according to Section 2607 – Precast Concrete Manholes.

3.2 Laterals Installation:

A. Wye shall be installed in sanitary sewer lines at all points shown on the plans or specified herein. If such branches are not to be used immediately, they shall be closed with gasketed plugs specifically designed for such purpose.

B. If the work consists of the construction of a sewer that is to replace an existing sewer, all of the existing service lines shall be connected to the new line.

C. Wyes shall be installed in sanitary sewers so as to properly serve each existing house and each vacant lot facing or abutting on the street or alley in which the sewer is being laid, and at such other locations as may be designated by the Engineer. The exact location of each connection shall be determined by the Engineer before backfilling.

D. Should ductile pipe lining be scratched, chipped, or otherwise damaged during the tapping process, it shall be properly repaired or recoated by the Contractor.

E. Laterals shall be bedded and backfilled according to Section 2250 – Trenching, Backfill, and Compaction.

F. Where the depth of cut is over 8 feet or where the grade of a sanitary sewer is lower than necessary to drain abutting property, and when designated by the Engineer, connecting risers shall be installed to serve each existing house and each vacant lot facing or abutting on the street in which the sewer is being laid.

G. Connecting risers shall be either 4 or 6 inches in diameter installed from a wye connection to the elevation designated by the Engineer. The wye or tee connection shall be securely supported by a block of concrete, as shown on the drawings, to support the riser pipe. Open ends of connecting risers shall be closed, as herein before specified for wye branches. Backfilling shall be carefully done around these risers.

3.3 Pressure Sewer Pipe Laying – General

A. Before sewer pipe is placed in position in the trench, the bottom and sides of the trench shall be carefully prepared and the necessary bracing and sheeting installed.

B. Unless noted otherwise on the drawings, all pressure sewers shall be installed with a minimum of thirty-six (36) inches of cover.

C. Water shall not be allowed to run or stand in the trench while pipe laying is in progress or before the joints are completed or before the trench has been backfilled. The Contractor shall not open up at any time more trench than his available pumping facilities are able to dewater.

D. Each piece of pipe and special fitting shall be carefully inspected before it is placed and no defective pipe shall be laid in the trench. No section of pipe installation will be skipped without a written request for such procedures from the Contractor and approved by the Engineer.

E. All pressure pipe 4 inches and over in diameter shall be provided with adequate thrust restraints. Thrust restraints, consisting of concrete thrust blocks and/or mechanical restraining rod attachment shall be furnished at all fittings, plugs, and all pipe bends as shown on the Drawings.

F. Air release valves, Air/Vacuum release valves, and Combination air valves shall be installed at the locations shown on the drawings.

G. A metallic tape or wire shall be installed in the same trench with all non-metallic pipe (PVC) in order that the pipe may be located with electronic metal detection equipment. The tape or wire shall be attached to the top of the pipe. Wire shall be T.W. 12-gauge solid copper conforming to specifications for annealed copper, ASTM B-3 and underwriters Laboratories Thermoplastic Insulated Wire Standard No. 83, latest revision. Wire shall be Simplex BW3001, or equal. Pipe detector tape shall be two (2) inches wide minimum metalized tape. Tape shall be Griffolyn Company, Inc., Terratape 2" D or equal. Wire and/or Tape shall be secured to pipe at intervals of 20 feet.

3.4 Pipe Protection:

A. Sewer pipe which, when completed, will have less than three (3) feet of cover, shall be provided with concrete protection and shall be constructed of ductile iron pipe.

B. Where foundation conditions are not satisfactory, as determined by the Engineer, sewer pipe shall be either laid on a concrete cradle, sand backfill, foundation material, and/or constructed of ductile iron pipe as shown on the plans or as directed by the Engineer.

3.5 Testing Of Gravity Sewers And Manholes:

A. General:

1. The approval and acceptance of gravity sewer lines and manholes shall be based on final testing. The Contractor must provide a 72-hour notice prior to final testing to the City Engineer. A representative from the Engineer and/or Owner must be present to witness final testing procedures. Tests performed in the absence of the Engineer's and/or Owner's representatives shall be considered invalid and shall be repeated by the Contractor.

2. Final testing of gravity lines shall only be performed after all work adjacent to and over the pipeline has been completed. Trench backfilling, grading, roadway sub-grade, concrete work, other utility installation, and any other superimposed loads shall be completed and in place prior to final testing.

3. Prior to any testing and final inspection, all gravity lines shall be cleaned of debris and flushed clean with water as necessary by the Contractor. Debris and flush water shall be contained at a lower manhole and removed from the line. Debris and flush water shall not be allowed to enter live existing sanitary sewers. Contractor shall be responsible for collection and proper disposal of debris and flush water.

4. All apparatus and equipment required for testing shall be furnished by the Contractor.

5. Contractor shall provide the Engineer and Owner with copies of all field notes and documentation obtained during final testing.

B. Scope:

1. All gravity sewers shall be tested by one or more of the following methods as directed by the City Engineer:

   a. Direct Visual Inspection by the Engineer
   b. Exfiltration of water
   c. Infiltration of water
   d. Exfiltration of air under pressure (Low Pressure Air Testing)
   e. Video Inspection.

2. In addition to the above testing requirements, all PVC gravity sewers shall pass mandrel testing to verify roundness and proper installation.

3. All manholes shall be vacuum tested.

C. Direct Visual Inspection by the Engineer

1. The Engineer and/or his Representative shall visually inspect all gravity sewer pipe installed to verify alignment and ensure the pipe is free from obstructions and debris. Each segment of sewer shall be "flashed" using sunlight and mirrors. When the full diameter of the pipe is visible between adjacent manholes, the segment of pipe is deemed properly aligned and free of sags and debris.

2. If segment of pipe fails visual inspection, the pipe shall be cleaned and/or replaced and re-tested by the Contractor.

D. Exfiltration of Water

1. The section of sewer to be tested shall be sealed by inserting inflatable rubber bags or plugs in the pipes or by other means approved by the Engineer. Water shall then be introduced into a manhole until the pipeline section is completely filled. The Contractor shall fill the pipe to the required test level prior to the time of exfiltration testing to permit normal absorption into the pipe walls if concrete or concrete lined ductile iron pipe is being tested. Throughout the test period of two (2) hours minimum, the water level in the upper manhole shall be maintained at least 18-inches above the crown of the upper end of the pipe or at least 18-inches above the groundwater table, whichever is greater. The length of pipe tested shall be limited such that the pressure on the centerline of the lower pipe end tested does not exceed six (6) feet water column.

2. Exfiltration of water shall not exceed 100-gallons per mile of sewer per inch of inside diameter per 24-hours in any section of the completed work. In no case shall the exfiltration of water exceed 2500 gallons per mile per 24 hours. All observed leaks shall be corrected by the Contractor even though exfiltration is within the allowable limits.

3. The Engineer may direct the Contractor to test selected sections of the sewer in the following manner: after the selected sections of the sewer are laid in the trench and the joints completed but before any backfill is placed, the Contractor shall install suitable bulkheads or stoppers in each end of the sewer and fill the sewer with water. The sewer shall be filled through one length of sewer pipe installed vertically at a wye or at the end of the pipe being tested. Water shall be maintained in the line approximately to the top of the fill pipe until the Engineer can inspect the section of sewer being tested. Any leaks in the sewer system being tested shall be repaired by the Contractor. The total amount of sewer thus tested shall not exceed five percent (5%) of the

total length of sewer constructed. Should the results of any of these tests indicate leakage, the Engineer may direct the Contractor to change the methods of construction to reduce the leakage on the remaining part of the work.

E. Infiltration of Water:

1. The section of sewer to be tested shall have been trench backfilled and the test conducted by inducing infiltration conditions by jetting the sewer trench for a sufficient length of time to insure that the water level in the trench is a minimum of eighteen(18) inches over the crown of the sewer pipe. The test must be performed before existing sewers are connected and before sewage load is allowed in the sewers.

2. Infiltration of ground water or other leakage into the sewer (including manholes) shall not exceed 100 gallons per mile of sewer per inch of inside diameter of the sewer per 24 hours in any section of the completed work, and in no case shall it exceed 2500 gallons per mile per 24 hours.

3. Infiltration flow shall be measured in wet weather by a 90-degree "V-notch" weir with free discharge or other means acceptable to the Engineer. These weirs shall be furnished, installed, and removed by the Contractor.

4. Any leaks into the sewer that can be located shall be repaired or corrected by the Contractor as directed by the Engineer regardless of infiltration test results.

F. Exfiltration of Air Under Pressure (Low Pressure Air Testing):

1. Scope

a. This recommended practice defines the proper procedures for acceptance testing of installed gravity sewer pipe, using low-pressure air, to provide assurance that the pipe, as installed, is free from significant leaks. Included are requirements for equipment accuracy, safety precautions, line preparation, test method, and minimum holding times. This recommended
practice does not cover the testing of manholes. All new pipe shall be low-pressure air tested to insure the integrity of the pipe and joints

b. Only lines tested after backfilling to final grade will be considered for acceptability. However, this test may also be used by the installer as a presumptive test to determine the condition of the line prior to backfilling. At no time will more than four manhole to manhole reaches of pipe be installed before air testing is performed.

c. Low Pressure Air Testing shall be conducted in accordance with ASTM C828, C924, F1417 and UBPPA UNI-B-6.

2. Responsibilities:

a. Responsibility of the Contractor: Unless otherwise specified, the Contractor shall furnish all the necessary equipment and be responsible for conducting all low-pressure air tests. In addition, the Contractor is responsible for any necessary repair work on sections that do not pass the test. No sealant shall be used in any newly installed sewer without the prior approval of the Engineer. Proper structural repair work will be required by the Engineer or the Owner.

b. Responsibility of the Engineer: The Engineer and/or a qualified inspector shall witness all low-pressure air tests and verify the accuracy and acceptability of the equipment utilized. The engineer should inform the Contractor regarding acceptable methods of repair in the event one or more sections fail to pass the low-pressure air test. The Engineer should also report to the Owner regarding the acceptability of the Contractor's work.

c. Responsibility of the Owner: The Owner shall make a final decision as to the acceptability of the Contractor's work based upon the Engineer's recommendation.

d. Regulatory Agencies: Regulatory Agencies in the State, Federal, and/or local level may be legally entitled to witness any air testing and/or review the results. The Owner or his Engineer should check to see that the low-pressure air test specified for his installation is at least as stringent as those which may be required by such regulatory bodies.

3. Equipment

a. Air testing shall be performed by the Contractor using equipment manufactured by Cherne Industries, Inc., or approved equal. Equipment used shall meet the following minimum requirements.

b. Pneumatic plugs shall resist internal testing pressures without requiring external bracing or blocking. However, the Contractor should internally restrain or externally brace the plugs to the manhole wall as an added safety precaution throughout the test. No one shall be allowed in the manhole adjoining a line being tested so long as pressure is maintained in the line.

c. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.

d. To facilitate test verification by inspecting Engineer, all air used shall pass through a single, aboveground control panel.

e. The aboveground air control equipment shall include a shut-off valve, pressure regulating valve, pressure relief valve, input pressure gauge, and a continuous monitoring pressure gauge having a pressure range from 0 to at least 10 psi.

f. Three individual hoses shall be used for the following connections:

1. from control panel to pneumatic plugs for inflation.
2. from control panel to sealed line for introducing the low pressure air.
3. from sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

4. Line Preparation

a. During sewer construction, all service laterals, stubs, and fittings into the sewer test section shall be properly capped or plugged so as not to allow for air loss that could cause an erroneous air test result.

b. A wetted interior pipe surface is desirable and will produce more consistent test results. Where practical, clean the line with cleaning balls, manufactured by Cherne Industries Incorporated or equal, prior to testing, to wet the pipe surface and eliminate debris.

5. Test Procedure

a. All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to the manufacturer's recommended inflation pressure. The sealed pipe shall be pressurized to 9 PSIG. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

b. After a manhole to manhole reach of the pipe has been backfilled and cleaned, and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to manufacturer's recommended inflation pressure. When plugs are being placed, the pipe adjacent to the manhole shall be visually inspected to detect any evidence of shear in the pipe due to differential settlement between the pipe and the manhole.

c. Low pressure air shall be slowly introduced into this sealed line until the internal air pressure reaches 4.0 PSIG greater than the average back pressure of any groundwater above the pipe, but not greater then 9.0 PSIG. If groundwater is present, refer to the

following Paragraph 6. Determination of Groundwater Elevation and Air Pressure Adjustment , of Section 3.5.F in this Specification.

d. After a constant pressure of 4.0 PSIG (greater than the average groundwater back pressure) is reached, the air supply shall be throttled to maintain the internal pressure for at least 2 minutes.

e. When the pressure has stabilized at 4.0 PSIG, the air hose from the control panel to air supply shall be shut off or disconnected. The continuous monitoring pressure gauge shall then be observed while the pressure is decreased to no less than 3.5 PSIG. At a reading of 3.5 PSIG, or any convenient observed pressure reading between 3.5 PSIG and 4.0 PSIG, timing for the test may begin.

f. The portion of line being tested shall be termed "Acceptable" if the allocated line pressure decreases less than one PSI in the time shown for the given diameters and lengths in the following table. Consult the City Engineer for test lengths greater than those provided.

MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP

PIPE DIA (INCHES)	SPECIFICATION TIME FOR LENGTH SHOWN (MIN:SEC)							
	100 FT	150 FT	200 FT	250 FT	300 FT	350 FT	400 FT	450 FT
8	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33

g. If there has been no leakage (0 PSIG drop) after one hour of testing, the test section shall be accepted and the test complete. If there is any pressure drop, the complete test shall be run to determine whether or not the test section is acceptable.

h. If the pressure drops 1.0 PSIG before the appropriate time shown in the table has elapsed, the air loss rate shall be considered excessive and the section of pipe has failed the test.

i. If the section fails to meet these requirements, the Contractor shall determine the source(s) of leakage, and he shall repair or replace all defective materials and/or workmanship to the satisfaction of the Engineer. The extent and type of repair which may be allowed, as well as results, shall be subject to the approval of the Engineer. The completed pipe installation shall then be retested and required to meet the requirements of this test.

6. Determination of Groundwater Elevation and Air Pressure Adjustment

a. In areas where ground water is known to exist, the Contractor shall install a ½-inch diameter capped pipe nipple, approximately 10 inches long, through the manhole wall directly on top of one of the sewer lines entering the manhole. A permanent, watertight seal shall be provided around the pipe nipple at the manhole wall. This shall be done at the time the sewer line is installed.

b. Immediately prior to the performance of the air testing, the ground water shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the nipple. The plastic tube shall be held vertically and a measurement of the height in feet of water over the invert of the pipe shall be taken after the water has stopped rising in this plastic tube. The height in feet shall be divided by 2.31 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11-1/2 feet, then the added pressure will be 5 psig. This will increase the 3.5 psig (mentioned in item e above) to 8.5 psig, and the 2.5 psig to 7.5 psig.)

c. The allowable pressure drop of 1.0 PSIG and the timing in the previous table are not affected and shall remain the same.

d. In no case shall the starting test pressure exceed 9.0 PSIG. If the average vertical height of groundwater above the pipe invert is more than 12.7 feet, the section so submerged may be tested using 9.0 PSIG as the starting test pressure.

e. After determining the air pressure adjustment, the test shall resume according to Item 5 - Test Procedures stated above.

f. After determining groundwater height, each pipe nipple shall be recapped and sealed to prevent future infiltration.

G. Video Inspection:

1. Prior to final acceptance, the sewer installation shall be video inspected by the Contractor's forces. Said inspection shall verify locations of service connections, and locations of possible defects/infiltration. Any defects found shall be repaired by the Contractor in a manner acceptable to the Owner.

H. Mandrel Testing:

1. Mandrel test (deflection test) shall be performed by the Contractor in order to verify the roundness and proper installation of the PVC gravity sewer line.

2. Equipment systems used to perform mandrel tests shall be specifically designed for the pipe material being tested. Mandrels that do not specifically state the size and type of piping for which it is applicable shall not be allowed.

3. Deflection Test:

a. The deflection test shall consist of testing PVC gravity sewer pipe for proper installation by the method outlined (see ASTM D3034). The testing shall be accomplished prior to final acceptance, but at least 30 days after the pipe has been backfilled completely to permit stabilization of the soil-pipe envelope.

b. After the pipeline has been installed and backfill materials have been compacted to their required standard densities, the mandrel shall be pulled by hand through the pipeline with a suitable rope or cable that is connected to an eyebolt at one end of the gauge. A similar rope or cable shall be attached to the eyebolt at the opposite end of the mandrel and tension shall be applied to it. This will insure that the mandrel maintains its correct position during testing and also to remove the mandrel if it should become lodged in an excessively deflected pipeline. Winching or other mechanical means of forcing the mandrel through the pipeline is unacceptable. Pipeline deflection testing shall have a deflection not exceeding 5% of the base inside pipe diameter as established by ASTM Standards D3034 and F679.

c. Permanent record of all testing with locations where excessive pipeline deflections occur shall be kept by the Contractor and forwarded to the Engineer after completion of testing on each line.

d. The Contractor shall immediately correct or replace all sections of pipe which deflect more than 5%.

e. All material and labor required for testing and/or replacement of pipelines shall be furnished by the Contractor.

f. Pipelines requiring correction and/or replacement shall be retested after an additional 30 day backfill stabilization period.

I. Manhole Vacuum Testing:

1. Vacuum tests shall be conducted on newly constructed manholes. Preliminary manhole testing shall take place following construction after all connections are made, and before backfilling. Test results derived from this test will allow time for necessary repairs to be completed before further construction proceeds and hinders such repairs. Final tests must be performed after the manhole has been backfilled.
2. Equipment:

a. Manhole vacuum tester assembly and vacuum pumps shall be manufactured by Cherne Industries, Inc., or approved equal.

b. Pneumatic plugs shall be manufactured by Cherne Industries, Inc. or approved equal. These plugs shall have a sealing length equal to or greater than the diameter of the connecting pipe to be sealed.

3. Procedures:

a. Plug all manhole entrances and exits other than the manhole top access using suitably sized pneumatic or mechanical pipeline plugs and follow all manufacturer's recommendations and warnings for proper and safe installation of such plugs. Plugs should be inserted a minimum of 6" beyond manhole wall. Make sure such plugs are properly rated for the pressures required for the test. The standard test of 10" Hg. (mercury) is equivalent to approximately 5 PSIG (0.3 bar) backpressure. Unless such plugs are mechanically restrained, it is recommended that the plugs are used with a minimum of two times (2x) safety factor or a minimum of 10 PSIG (0.7 bar) backpressure usage rating.

CAUTION: BRACE INVERTS IF LINES ENTERING THE MANHOLE HAVE NOT BEEN BACKFILLED TO PREVENT PIPE FROM BEING DISLODGED AND PULLED INTO THE MANHOLE.

b. Any other openings such as lifting holes shall be sealed with an approved non-shrink grout.

c. Install the vacuum tester head assembly at the top of the manhole. Adjust the cross brace to insure that the inflatable sealing element inflates and seals against the straight top section of the manhole or the ring assembly, if possible. (If using a "plate" style manhole tester, position the plate on the manhole ring assembly).

d. Attach the vacuum pump assembly to the proper connection on the test head assembly. Make sure the vacuum inlet/outlet valve is in the closed position.

e. Following safety precautions and manufacturer's instructions, inflate sealing element to the recommended maximum inflation pressure.
CAUTION: DO NOT OVER INFLATE.

f. Start the vacuum pump and allow pre-set RPM to stabilize.

g. Open the inlet/outlet ball valve and evacuate the manhole to 10" Hg. (approximately negative 5 PSIG, 0.3 bar).

CAUTION: DO NOT PRESSURIZE MANHOLE! THIS MAY RESULT IN MANHOLE DAMAGE AND/OR RESULT IN MANHOLE TEST HEAD DISLODGING FROM MANHOLE INLET!

h. Close vacuum inlet/outlet ball valve and monitor vacuum for specified test period (see table). If vacuum does not drop in excess of 1" Hg., manhole is considered acceptable and the manhole passes the test. If manhole fails the test, Contractor shall complete necessary repairs and repeat test procedures until satisfactory results are obtained.

Minimum Test Times for Various Manhole Diameters

depth – feet	Manhole diameter – inches			
	48	60	72	96
8	20 sec	26 sec	33 sec	38
10	25 sec	33 sec	41 sec	48
12	30 sec	39 sec	49 sec	57
14	35 sec	46 sec	57 sec	67
16	40 sec	52 sec	67 sec	76
18	45 sec	59 sec	73 sec	86
20	50 sec	65 sec	81 sec	95
+ 2 ft incr.	+5 sec	+6.5 sec	+8.0 sec	+9.5 sec

(The values listed above are based upon ASTM Specification C1244 "Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test".)

4. Repeat the above test procedure after backfilling manhole for final acceptance test.

5. All manholes that fail the test or have visible leaks, even if they pass the test, shall be repaired or replaced by the Contractor until the manholes pass the test, to the complete satisfaction of the City Engineer. Manholes that have any visible leaks will not be accepted.

3.6 Testing Of Force Mains

A. General:

1. This Section shall cover testing of sanitary sewer force mains for pipe sizes of four inches (4") in diameter and larger for flushing, hydrostatic pressure and leakage. Testing shall be accomplished so that all portions of the system are flushed and tested according to these requirements. These requirements are for both Ductile Iron and Polyvinyl Chloride (PVC) Pipe. The Contractor shall furnish test equipment, labor, materials, and water for all tests. All test equipment shall be approved by, and meet the requirements of, the City Engineer for the City of Tuscaloosa.

2. The Contractor must provide a 24-hour notice prior to final testing to the City Engineer.

3. All apparatus and equipment required for testing shall be furnished by the Contractor.

4. Contractor shall provide the Engineer and Owner with copies of all field notes, documentation, and recording charts obtained during final testing.

B. Flushing:

1. Prior to beginning the pressure test, the line shall be flushed to remove all dirt and debris trapped in the line.

2. All valves shall be partially opened and closed during the flushing process.

3. All lines shall be flushed with a velocity of at least two and one-half feet per second (2.5 fps).

4. The Contractor is responsible for the proper disposal of all flushed water.

C. Testing:

1. Before applying the specified test pressure, all entrained air shall be expelled completely from the section pipe under test. Air shall be bled from the highest elevations in the line. If permanent air vents are not located at the high points in the test section, corporation cocks meeting the approval of the City Engineer shall be installed at such points so that air may be expelled as the line is filled with water. At the conclusion of the pressure test, the corporation cocks shall be removed and tightly plugged, or left in place at the direction of the City Engineer.

2. All exposed pipe, fittings, and joints shall be examined carefully during the test. Any damaged or defective pipe or fittings or any visible or audible leaks, discovered during or following the pressure test shall be repaired or replaced, regardless of the pressure test results, with sound material by the Contractor. The test shall be repeated until the results are satisfactory to the City Engineer.

3. The Test Pressure shall be the Working Pressure of the line as defined below, but in no case less than one hundred pounds per square inch (100 psi).

   a. The Working Pressure shall be defined as one and on-half (1.5) times the shut-off head of the system pump or as defined by the City Engineer.

4. Leakage shall be defined as the quantity of water that must be supplied into the section of pipe being tested to maintain pressure within ± 5 psi of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage **shall not** be measured by a drop in pressure in a test section over a period of time.

5. Upon complete removal of all air entrapped in the line, the line shall again be filled with water and pressurized to the required test pressure. The line shall be allowed to stabilize at the test pressure for a minimum of four (4) hours before conducting the pressure test.

6. Duration of the test shall be two (2) hours for uncovered pipe and six (6) hours for covered pipe. The test pressure shall not vary by more that plus or minus five pounds per square inch (± 5 psi) during the duration of the test. The specified test pressure shall be applied by means of a pump connected to the pipe.

7. A recording pressure gauge approved by the Engineer shall be installed and pressure fluctuations recorded for the duration of the test. For each test, copies of all test charts and records shall be furnished to the Engineer.

D. Acceptance:

1. Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified, the failure shall be located and repaired using approved materials an acceptable construction practices until the leakage is within specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

2. Maximum allowable leakage in a test period shall not exceed:

$$L = \frac{SD\,(P^{1/2})}{133{,}200}$$

where: L = allowable leakage in gallons per hour
S = length of pipe tested in feet
D = nominal diameter of pipe in inches
P = average test pressure during the leakage test in pounds per square inch, gauge (psig)

3.7 Clean-Up And Grassing:

A. After the ditch lines have been sufficiently compacted, all excess material shall be removed from the job site by the Contractor.

B. Any trees or undergrowth shall also be removed by the Contractor.

C. All disturbed areas shall have topsoil replaced equal to that before construction began. If necessary, the Contractor shall provide topsoil.

END OF SECTION 02722

SECTION 02729 - THRUST RESTRAINT

PART 1 - GENERAL

1.1 Work Included:

A. All pressure pipe 2-inches and over in diameter shall be provided with adequate thrust restraints. Thrust restraints, consisting of concrete thrust blocks and/or mechanical restraining rod attachment shall be furnished at all hydrants, valves, fittings, plugs, and all pipe bends 11-1/4-degrees or greater.

B. Concrete used for thrust backing shall be 2000 psi min. Concrete thrust blocks shall be poured against undisturbed earth having sufficient bearing strength to support the thrust load.

C. Tie rods and clamps shall be installed where shown on the drawings and as needed. Tie rods and clamps shall be of an approved design and shall be protected against corrosion by a field coat of bituminastic coating hand applied before and after installation.

D. Thrust blocking shall comply with the charts outlined in the standard details and adjusted for pressures or soil bearing strengths that differ from those used in the chart.

1.2 Payment:

A. No separate payment shall be made for thrust restraint. Costs shall be included in the price of the piping.

END OF SECTION 02729

SECTION 02800 - LANDSCAPING

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General Conditions and Division-1 Specifications Sections shall apply to, and form part of this Section.

1.2 Description of Work

A. The extent of landscape development is shown on the drawings.

B. The work covered under this section shall consist of furnishing all labor, materials, tools, tests, royalties, services and other incidentals as may be required for the good and proper completion of planting operations.

C. The Contractor is responsible for notes on the drawings which call attention to particular requirements or conditions. The fact that these requirements or conditions are not called out in the specifications does not relieve the Contractor of responsibility for these requirements or conditions.

D. Maintenance of Site During Planting

1. Sidewalks, roads and other paving adjacent to planting operations shall be kept clean and free of obstruction, mud and debris at all times. Wheels of vehicles used in work shall be cleaned if necessary. Sidewalks shall be protected from damage and marking from wheels of vehicles used in the work.

2. Flushing of streets or disposal of dirt or debris into sewers or drainage ditches will not be permitted.

3. Dust shall be controlled by approved means to the satisfaction of the Landscape Architect.

E. The Contractor will be responsible for removal of all tree guy wires. When making inspections of the plant material during the Guarantee Period, it will be up to the Contractor to determine when to remove guy wires to prevent girdling to tree trunks. The contractor will re-guy trees (in a fashion which will properly support the tree) if the tree is not yet mature enough to support its own weight, or not enough root growth has occurred to anchor it firmly.

If damage occurs to trees from girdling of the trunks, or removal of guy wires too early (or not properly positioned) the Contractor will replace all such material at no charge to the Owner. Guarantee periods for this material shall be as described in Paragraph 1.04(F).

1.3 Quality Assurance

A. Provide at least one person who shall be present at all times during execution of this portion of the work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods for their installation, and who shall direct all work performed under this Section.

B. All workmen shall have sufficient skill and experience to perform properly the work assigned to them. Workmen engaged in special work or skilled work shall have the sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactory.

C. The selection of all materials and execution of all preparations required under the drawings and specifications shall be subject to the approval of the Landscape Architect. The Landscape Architect shall have the right to reject any and all materials, any and all work, which in his opinion does not meet with the requirements of the specifications at any stage of the operations. All rejected materials shall be removed from the site by the Contractor at his expense. Rejected work shall be replaced with work of the specified quality or corrected as directed by the Landscape Architect at no additional cost to the Owner.

D. All plants and planting material shall meet or exceed the specifications of Federal, State, and County laws requiring inspection for plant disease and insect control.

E. Quality and size shall conform with the current edition of "Horticulture Standards" for number one grade nursery stock as adopted by the American Association of Nurserymen.

F. All plants shall be true to name. One of each bundle or lot shall be tagged with the name and size of the plants in accordance with the standards of practice of the American Association of Nurserymen. In all cases, botanical names shall take precedence over common names.

G. Plant materials nomenclature to conform to Hortus Third, A Concise Dictionary of Plants Cultivated in the United States and Canada by MacMillian Publishing Company, Inc., New York.

1.4 Guarantee Period And Replacements

A. The guarantee period shall begin at the time of Final Acceptance as defined in Paragraph 3.06(B).

B. All plant material shall be guaranteed by the Contractor for a period of one year from the date of Final Acceptance, to be in good, healthy and flourishing condition.

C. The Contractor shall make periodic inspections, at no extra cost to the Owner, during the guarantee period to determine what changes, if any, should be made in the Owner's maintenance program. All such recommended changes shall be submitted, in writing, to the Owner.

D. The Contractor shall replace, without cost to the Owner, and as soon as weather conditions permit, all dead plants and all plants not in a vigorous, thriving condition, as determined by the Landscape Architect during and at the end of the guarantee period. The plants shall be free of dead branches and dead branch tips, and shall bear foliage of a normal density, size and color. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this specification.

E. The Contractor shall make all necessary repairs to grades, mulch or plant materials required because of plant replacements. Such repairs shall be done at no extra cost to the Owner.

F. The guarantee of all replacement plants shall extend for an additional period of one year from the date of their acceptance after replacement or for the guarantee period, whichever time period is greater. In the event that a replacement plant is not acceptable during or at the end of the said extended guarantee period, the Owner may elect either subsequent replacement or credit for each item.

G. The guarantee does not include losses due to Acts of Nature, Vandalism, or Owner neglect as determined by the Landscape Architect.

PART 2 - PRODUCTS

2.1 Soil Mix

A. Soil mix furnished shall be fertile, friable, sandy loam soil mix complying with the following quantitative analysis:

1.	Decomposed organic matter	5% to 8%
2.	Silt	10% to 30%
3.	Sand	25% to 75%
4.	Clay	5% to 10%
5.	pH	5.0 to 6.5

B. Soil mix shall not contain any substance or material inhibitory to plant growth, and shall be without admixture of clay, hardpan, mulch, marl, shale or other material which in the opinion of the Landscape Architect shall render it unsuitable for use under this Contract. Soil mix shall also be free of stones, lumps, noxious weeds or their seeds, grasses or their seeds, other plants or their roots, branches, sticks, or other extraneous material larger than 2 inches in diameter. Soil mix found to contain any of the above-listed items shall be chemically or mechanically treated or removed from the project at the discretion of the Landscape Architect.

C. The Contractor shall be required to have tests run on the soil mix he proposes to use to determine the soil mix's compliance with the above-listed quantitative analysis. In addition to the above tests, the Contractor shall be required to have tests run for soluble salt, nitrogen, phosphorus, potassium, calcium, and magnesium content, for percent organic matter, and pH. tests shall be conducted by the Soils Testing Laboratory at Auburn University, Auburn, Alabama, phone: (334) 844-4741.

D. Following initial soil testing and approval of soil mix for use, soil mixs placed on the project shall be sampled and tested as specified above at random as directed by the Landscape Architect at no additional cost to the Owner.

E. Additions of fertilizer and/or lime to the soil mix furnished as may be recommended by the Soil Test Report issued by the Soil Testing Laboratory of Auburn University and approved by the Landscape Architect shall be done by the Contractor as part of the work under this Contract. No additions of fertilizer, lime, conditioning or placement of soil mix shall be done prior to furnishing in writing to the Landscape Architect all initial soil test results and obtaining his approval of soil mixes tested.

2.2 Fertilizer

A. Fertilizer shall be a commercially available material conforming to Alabama Fertilizer Laws, Title 2, Section 202-300, Alabama Code of 1940, as amended. Fertilizer shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it, in the opinion of the Landscape Architect, unsuitable for use, will not be accepted. Provide commercial balanced fertilizer of analysis 13-13-13 for use in soil mixture conditioning.

2.3 Lime

A. Lime shall be crushed or ground so that 90 percent passes a 10-mesh screen and not less than 50 percent will pass a 60-mesh screen. All lime shall have a neutralizing value of 90 percent calcium carbonate or better. Lime which has become caked or otherwise damaged, making it, in the opinion of the Landscape Architect, unsuitable for use, will not be accepted.

B. Lime shall be applied at the rate specified by the soil test reports.

2.4 Water

A. Potable water for use under this Contract shall be furnished by the Owner. The Contractor shall make, at his expense, whatever arrangements may be necessary to insure an adequate supply of water to meet the needs of this Contract. He shall also furnish all necessary hose, equipment, attachments and accessories as may be necessary to complete the work specified.

2.5 Organic Matter

A. Provide Klumb's decomposed pine bark soil conditioner for use in plant pit mix.

2.6 Sand

A. Provide clean sharp builder's sand for use in plant pit mix.

2.7 Soil Mix

A. All soil mix used in tree and shrub pits for planting operations as specified shall be prepared and conditioned as follows: Mix one part by volume of decomposed shredded pine bark, one part sand, and four parts by volume of soil mix specified and add 2 pounds of 13-13-13 fertilizer to each cubic yard of the mixture.

2.8 Plant Materials

A. Provide all plant materials as indicated on the plan and/or listed in the plant schedule.

1. General:

a. Unless otherwise specifically permitted, plant materials shall be nursery-grown in accordance with the best modern horticultural practices.

b. Plant materials shall comply with State and Federal laws relating to inspection for diseases and insect infestation. Inspection certificates shall be filed with the Owner.

c. Substitutions of plant materials will not be permitted unless authorized in writing by the Landscape Architect. If proof is submitted that any plant size specified is unobtainable, a proposal will be considered for use of the nearest equivalent size or variety.

d. Durable, legible labels stating the correct plant name and size, specified in the Plant Schedule shall be securely attached to plants, bundles and/or containers of plant material delivered to the planting site

for the purpose of inspection and plant identification.

2. Quality and Inspection:

   a. Plant materials shall conform to the requirements set forth in ANSI 260.1 Standard for Nursery Stock and shall be of standard quality, true to name and type and first-class representatives of their species and variety. B&B materials shall have been root pruned within the last two years. Container grown plants shall have been grown in the delivery container for one growing season.

   b. Plant materials shall have normal, well-developed branches and vigorous fibrous root systems. They shall be healthy, vigorous plants free from defects, decay, disfiguring roots, sun-scald injuries, abrasions of the bark, diseases, insect pests or their eggs, borers and any other form of infestation or objectionable disfigurements.

      Plants lacking compactness or proper proportions, plants which are weak or thin, trees which have a damaged or crooked leader or multiple leaders unless specifically specified, or plants injured by too close planting in nursery rows will be rejected. Plant materials which have been cut back from larger grades to meet certain requirements will not be accepted. Plants shall not be pruned prior to delivery to the point of planting.

   c. All plants shall be subject to inspection and approval by the Landscape Architect at any place and at any time. Part of the plants required for the work may be inspected at the place of growth, but inspection at the place of growth shall not in any way impair the right of rejection at the site.

3. Measurements:

   a. Plants shall be measured when branches are in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from tip to tip.

   b. Caliper measurements shall be taken at a point on the trunk 6 inches above natural ground line for trees up to 4 inches in caliper. Caliper measurements for trees specified as greater than 4 inches in caliper shall be taken at a point on the trunk 12 inches above the natural ground line.

   c. If a range of size is given, no plant shall be less than the minimum size and not less than 50% of the plants shall be as large as the maximum size acceptable and are the measurements after pruning, where pruning is necessary.

   d. Plants that meet the measurements specified, but do not possess a normal balance between height and spread, shall be rejected.

   e. Plants larger than those specified and of equal quality to those specified may be accepted at no additional cost to the Owner.

4. Balled Plants:

   a. Plants designated "B&B" in the Plant Schedule shall be adequately balled with firm, natural balls of soil in sizes as set forth in ANSI 260.1 Standard for Nursery Stock. Balls shall be firmly wrapped with jute burlap weighing not less than 7.2 ounces per square yard or other approved strong cloth of equal strength and resistance to tearing and laced with a suitable heavy jute twine. No balled plant shall be planted if the ball is cracked or broken before or during the process of planting or if the plant is loose in the ball.

5. Container-Grown Plants:

   a. Plants designated "container-grown" in the Plant Schedule shall be furnished in sound containers of the size specified. The plant materials contained therein shall conform to the requirements set forth in ANSI 260.1 Standard for Nursery Stock for container-grown plants. No container-grown plant shall be planted if the root and soil mass is cracked or broken either before or during the process of planting. Root bound container-grown stock will not be accepted. Containers shall be free of weeds and grasses. Containers found to contain objectionable weeds and/or grasses will be rejected.

6. Delivery, Handling and Temporary Storage:

   a. Plants designated "B&B" shall be freshly dug at the time of delivery. All plant materials shall be dug

and/or handled with skill and care so as to prevent injuries to the trunk, branches and roots and shall be packed in an approved manner to ensure arrival at the project site in good condition.

b. Plants shall not be bound with wire or rope at any time in such a manner that injury to the plants results. Plants shall be handled and lifted from the bottom of the ball or from the container only.

c. Provide protective covering for the plants during delivery and while in storage awaiting planting.

d. Until planted, protect plant materials from excessive moisture loss and/or freezing by covering the root balls with sawdust or other approved mulch material. Provide adequate water to all plant materials while in storage at the site.

2.9 Pine Straw

A. Provide clean pine straw, free of weed seeds, moss, stones, sticks, cones, or other debris. Pine straw shall not contain materials or toxic substances which may adversely influence plant growth.

2.10 Antitranspirant

A. Provide 'wilt-proof' antitranspirant or other approved wilt-proofing agent for all plant materials in leaf.

2.11 Staking And Guying

A. Provide materials for staking and guying of trees as called for by the planting details.

B. Removal of guy wires will be the responsibility of the Contractor, as stated in Paragraph 1.02(E).

PART 3 - EXECUTION

3.1 Site Preparation

A. Remove all construction debris from the subgrade surface before beginning landscape operations. Subgrade shall be free of all brick, concrete, mortar, gravel, asphalt, lumber, sheetrock, and any other materials which would adversely influence plant growth.

B. Install a minimum 4 inch depth of approved soil mix over all areas to receive sod. Provide and install additional soil mix as needed to provide positive surface drainage off of the site.

C. Grade areas uniformly and free of low spots or other irregularities. Obtain the approval of the Landscape Architect before proceeding with planting operations.

3.2 Tree And Shrub Installation

A. Lay out locations of plants and outlines of plant areas and obtain the approval of the Landscape Architect before planting is begun. The Landscape Architect may adjust the locations of plant materials prior to planting.

B. Examine existing site conditions before work is begun. Notify the Landscape Architect of any unsatisfactory conditions. Do not perform work until such conditions are satisfactory and acceptable.

C. Inform the Landscape Architect in writing prior to planting of existing conditions which could be detrimental to the successful planting and subsequent growth and health of any plant material, including but not limited to: subsurface drainage conditions, underground utility locations, and other subgrade conditions.

D. All pits shall be circular in outline; all excavations shall have vertical sides. The depths and widths shall be as specified on planting details.

E. Setting Plants:

1. Set plants uniformly 2"-4" higher than the surrounding grade or as necessary to provide adequate drainage away from the roots.

2. Prepare planting pits as specified and as shown on the drawings, prior to inserting plants. Use specified soil mixture to backfill plant pits. When plant pits have been backfilled approximately 2/3 full, water

thoroughly before installing remainder of soil to top of pit.

3. Set plant plumb and brace rigidly in position until the planting soil has been tamped solidly around the ball and roots.

4. Cut rope or strings from top of ball after plant has been set. Leave burlap or cloth wrapping intact around balls. Turn under and bury portions of burlap exposed at top of ball.

5. Form shallow saucers capable of holding water about each plant by placing a mound of soil mix around the edge of each filled-in pit.

7. Water all plants thoroughly by hose immediately after planting.

8. Mulch plant saucer uniformly with a two inch layer of mulch.

9. Guy trees over two inches in caliper with a minimum of three guy wires spaced evenly around the tree. Attach each guy wire to tree with a single loop through a hose with an angle of 60 degrees to the tree trunk. Attach the guy wire in accordance with planting details. Keep guy wires taut. Removal of guy wires will be the responsibility of the Contractor, as stated in Paragraph 1.02(E).

F. All plant materials shall be pruned as necessary at the site in accordance with standard modern horticultural practice as approved by the Landscape Architect. Cuts over 1/2" in diameter shall be painted with flat black oil based enamel paint. Pruning shall be done with clean, sharp tools.

3.3 Site Maintenance

A. During the course of executing of the work under this Contract, excess and waste materials shall be continuously and promptly removed and disposed of as specified herein and all reasonable precaution taken to avoid damage to existing structures.

B. When all work has been completed in an area, the area shall be cleaned up to the satisfaction of the Landscape Architect. Debris, rubbish, subsoil, soil mix and other waste material shall be cleaned up and removed from the project site.

3.4 Protection Of The Work And The Public

A. The Contractor shall furnish and place to his satisfaction, suitable and sufficient barricades, warning signs, lanterns, red flags, torches or approved reflectors to adequately protect the work under construction from damage and to protect the work under construction from damage and to protect the public from accident and unnecessary inconvenience.

B. In the event that pavement, structures, walls, sidewalks, curbs, substructures, or utilities are disturbed or damaged by the Contractor during execution of the work under this Contract, the Contractor shall make repairs, at no additional cost to the Owner, according to the following:

1. If the damaged item is owned or operated by one of the several public utilities, repair shall be accomplished as directed by the utility.

2. If the damaged item is the property of the Owner, repair shall be made in a manner acceptable to the Landscape Architect and shall conform to the requirements of applicable Federal Government or local codes.

3.5 Landscape Maintenance

A. Maintenance shall begin immediately after each plant is planted and shall continue with the following requirements:

1. Maintenance of new planting shall consist of pruning, mowing, trimming, water, cultivating, weeding, mulching, resetting of plants to proper grades of upright position, restoration of the planting saucer, and furnishing and applying such sprays as are necessary to keep the planting free of insects and diseases. This will be required until Final Acceptance of the work.

2. Planting areas and plants shall be protected at all times against trespassing damage of any kind for the

duration of the maintenance period. If any plants become damaged or injured, they shall be treated or replaced as directed by the Landscape Architect at no additional cost to the Owner. No work shall be done within, adjacent to, or over any plant or planting area without proper safeguards and protection to the plant material.

3. The Contractor shall be responsible during the contract period for keeping all planting and work incidental thereto in good condition by planting replacement plants, watering, weeding, cultivating, pruning and spraying, and by performing all other necessary operations of care for promotion of root growth and plant life so that all work is in a satisfactory condition at the termination of the maintenance period.

4. Mow all turf areas as needed so that no more than one-third of the total growth is removed at one time. Mow all turf areas at a height of one and one-half inches. Turf areas shall be mowed with equipment which will collect and bag the clippings. All clippings shall be removed and properly disposed off of the site.

5. Trim all curbs, walks, and bed areas each time the turf is mowed to provide a crisp, clean appearance.

6. Remove all leaves, litter, gravel, or other debris from all landscaped areas at weekly intervals until Final Acceptance. Collect and properly dispose of such materials off the site.

7. The root system of all plants shall be watered at such intervals as will keep the surrounding soil in best condition for promotion of root growth and plant life.

3.6 Inspection And Final Acceptance

A. The Landscape Architect shall inspect all work for Final Acceptance upon written request of the Contractor. The request shall be received at least seven days before the anticipated date of inspection.

B. Upon completion of all repairs or renewals (which may appear to be necessary in the judgment of the Landscape Architect at the time of Final Inspection), the Landscape Architect shall certify in writing as to the Final Acceptance of the project.

C. The Contractor's responsibility for maintenance (exclusive of replacement) shall terminate the day after Final Acceptance of the work.

PART 4 - MEASUREMENT AND PAYMENT

Measurement and payment for plant materials will be complete and in place per each plant material. This shall include, but may not be limited to: the plant material item, all topsoil, soil mixes, lab testing and reports for both topsoil and soil mixes, fertilization and liming as called for in topsoil/soil mix reports, herbicide treatment, nursery tagging and associated trips, staking and guying per construction details, mulches, shipping/freight costs, taxes, warranties, watering, labor and equipment used for installation, storing and protection of plant material both on-site and off, and maintenance of the installed material until final acceptance.

END OF SECTION 02800

SECTION 02810 - UNDERGROUND IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General Conditions, and Division-1 Specification Sections shall apply to and form a part of this Section.

1.2 Description Of Work

A. Unless otherwise specified or indicated on the drawings, the construction of the sprinkler system shall include the furnishing, installing, and testing of all mains, laterals, risers, and fittings, the furnishing and installing of sprinkler heads, quick coupling valves, gate valves, controller and all necessary specialties and accessories, the removal and/or restoration of existing improvements, excavation and backfill, and all other work in accordance with the plans and specifications as required for a complete system.

B. The work consists of installing a complete underground irrigation system as shown on the drawings and as hereinafter specified, including the furnishing of all labor, plant, equipment, appliances, and materials and in performing all operations in connection with the construction of the irrigation system. It shall include furnishing and installing all plastic pipe and fittings, automatic control valves, pressure relief valves, check valves, valve access boxes, valve marker, manual drain valves, sprinkler heads, electric or hydraulic controllers, electric wire, hydraulic lines, etc., as required for complete system as shown on the drawings, called for in these specifications or as may be required for proper operation of the system.

C. Sidewalks, roads and other paving adjacent to planting operations shall be kept clean and free of obstructions, mud and debris at all times. Wheels of vehicles used in work shall be cleaned if necessary. Sidewalks shall be protected from damage and marking from wheels of vehicles used in the work.

D. Flushing of streets of disposal of dirt or debris into sewers or drainage ditches will not be permitted.

1.3 Quality Assurance

A. All local, Municipal and State Laws and Rules and Regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications and their provisions shall be carried out by the Irrigation Subcontractor. Anything contained in these specifications shall not be construed to conflict with any of the above mentioned Rules, Regulations or requirements and where a conflict may occur, the Rules, Regulations or requirements of the governing code shall be adhered to. However, when these specifications and/or drawings call for or describe materials, workmanship or construction of better quality, higher standard or larger size, these specifications and/or drawings call for or describe materials, workmanship or construction of a better quality, higher standard or larger size, these specifications and/or drawings shall take precedence over the requirements of said Rules, Regulations or Codes.

B. In addition to complying with all pertinent codes and regulations, comply with the latest rules of the National Electric Code and local city and county Electrical Codes for all electrical work and materials.

C. Provide at least one person who shall be present at all times during execution of this portion of the Work and who shall be thoroughly familiar with the type of materials being installed and the materials manufacturers' recommended methods of installation and who shall direct all work performed under this Section.

D. All workmen shall have sufficient skill and experience to perform properly the work assigned to them. Workmen engaged in special work or skilled work shall have the sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactorily.

E. All materials to be incorporated in this system shall be new and without flaws or defects and of quality and performances as specified and meeting the requirements of the system.

1.4 Scope Of Work

A. The irrigation system shall be constructed using the sprinklers, valves, piping, fittings, controllers, wiring, etc. of sizes and types shown on the drawings and as called for in these specifications or approved equals. The system shall be constructed to grades and conform to areas and locations as shown on the drawings.

B. It is the intention of these specifications, together with the accompanying drawings, to accomplish the work of installing a sprinkler system which will operate in an efficient and satisfactory manner according to the workmanlike standards established for the sprinkler operation. Notwithstanding is the fact that these specifications and drawings may be deficient in setting forth a complete detailed description of the work to be done.

C. It shall be the Contractor's responsibility to ensure and guarantee coverage of the areas shown on the drawings to be irrigated. He shall also guarantee the satisfactory operation of the entire system and the workmanship and restoration of the area. The entire system shall be guaranteed for a period of one year from the date of its acceptance, and he hereby agrees to repair or replace any such defects occurring within that year, free of expense to the Owner.

D. The Contractor shall be responsible for coordination with the local water authority and shall be responsible for any and all permits, fees, tapping charges and other costs required to make the irrigation system completely operational.

E. The Contractor shall coordinate the work of this Section with that of the other trades.

1.5 Guarantee - Warranty

A. The Guarantee period begins at the date of final acceptance of the work of this Section and extends for one calendar year from that date.

B. All work called for by this Section of the specifications shall be free of defects of workmanship and materials for a period of one (1) year from the date of final acceptance of this work. The Contractor shall repair or replace all such defective work and all other work damaged by these repairs or replacements to the satisfaction of the Landscape Architect at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 Plastic Pipe

A. Plastic pipe shall be rigid unplasticized PVC, extruded from virgin parent material of the type specified on the drawings. The pipe shall be homogenous throughout and free from visible cracks, holes, foreign materials, blisters, deletions, wrinkles and dents.

B. All pipe shall be continuously and permanently marked with the manufacturer's name and trademark, size schedule and type of pipe, working pressure at 73 degrees Fahrenheit and National Sanitation Foundation (N.S.F.) approval.

C. All plastic pipe fittings to be installed shall be molded fittings manufactured of the same material as the pipe and shall be suitable for solvent weld, or screwed connections. No fittings made of other materials shall be used except as hereinafter specified.

D. For joining, use a solvent complying with ASTM D2564 and recommendations of the manufacturer of the plastic pipe used.

E. For cleaning, use cleaner complying with plastic pipe manufacturer's recommendations.

2.2 Sprinkler Heads

A. Sprinkler heads shall be of the types and sizes with the diameter or radius of throw, pressure, discharge and any other designations necessary to determine the type and sizes, as indicated on the drawings. They shall be Rainbird or approved equal model sprinkler. All heads of a particular type and for a particular function in the systems shall be of the same manufacturer and shall be marked with the manufacturer's name and identification, in such a position that they can be identified without being removed from the system.

2.3 Electric Remote Control Valves

A. All electric remote control valves shall be of the type and size called for by the drawings and shall be Rainbird (no substitutions). Valves shall be twenty-four (24) volt with epoxy-sealed solenoid coils, manual flow control stem and 200psi rated.

2.4 Automatic Controller

A. Automatic controller shall be of the type called for on the drawings or approved equal. Controller shall be as defined on the irrigation plans and details.

2.5 Sprinkler Risers

A. All sprinkler risers shall be a 'swing joint' composed of three street joints and a one (1) inch schedule 80 PVC pipe riser.

2.6 Double Check Valve

A. Double check valve shall be 2" Watts model 007QT or approved equal and shall meet the following standards: ASSEE No. 1015; AWWA C506-78; CSA B64. Valves shall meet all local regulations.

2.7 Other Materials

A. All other materials, not specifically described but required for a complete and proper irrigation system installation, shall be new, first quality of their respective kinds and subject to the approval of the Landscape Architect.

PART 3 - EXCAVATION

3.1 Excavation And Backfill

A. Trenches for plastic pipe sprinkler lines shall be excavated of sufficient depth and width to permit proper handling and installation of the pipe and fittings, or the piping may be installed by any other method that the Contractor may desire, if approved by the Landscape Architect and the pipe manufacturer.

B. The backfill shall be thoroughly compacted and evened off with the adjacent soil level. Selected fill dirt or sand shall be used if soil conditions are rocky. In rocky areas the trenching depth shall be two (2) inches below normal trench depth to allow for this bedding. The fill dirt or sand shall be used in filling four (4) inches above the pipe. The remainder of the backfill shall contain no lumps or rocks larger than three (3) inches. The top six (6) inches of the backfill shall be free of rocks over one (1) inch, subsoil or trash.

C. Unless otherwise indicated on the drawings or required, all plastic pipe main lines shall be installed with a minimum cover of eighteen (18) inches based upon finished grades. All lateral lines shall be installed with a minimum of twelve (12) inches of cover.

D. The Contractor and Owner shall agree upon the amount of additional payment at the time any rocky condition may be encountered. Failure of the Contractor to get an agreement in writing from the Owner at the time rock is encountered and his progressing with any such trenching shall be at the Contractor's expense.

E. Layout of piping and heads is approximate. Adjust locations to avoid planting and other obstructions.

3.2 Pipe Installation

A. Sprinkler lines shown on the drawings are essentially diagrammatic. Locations of all sprinkler heads, valves, piping, wiring, etc., shall be established by the Contractor at the time of construction. Spacing of the sprinkler heads or quick coupling valves are shown on the drawings and shall be exceeded only with the permission of the Landscape Architect.

B. Layout of piping and heads is approximate. Adjust locations to avoid planting and other constructions.

C. Pipe sizes shall conform to those shown on the drawings. No substitutes of smaller pipe sizes will be permitted, but substitutions of larger sizes may be approved. All pipe damaged or rejected because of defects shall be removed from the site at the time of said rejection. In the event the pipe sizes are not shown on the drawings, the contractor shall size the pipes to ensure that head to head irrigation coverage is provided by the system.

D. Where piping on the drawings is shown under paved areas but running parallel and adjacent to planted areas or turf areas, the intent of the drawings is to install the piping of the planted or turf areas.

E. Generally, piping under concrete or asphalt shall be installed by jacking, boring, or hydraulic driving. Where any cutting or breaking of sidewalks, concrete work and/or asphalt is necessary, it shall be removed and replaced by the Contractor. Permission to cut or break sidewalks, concrete work and/or asphalt shall be obtained from those having proper jurisdiction.

F. Plastic pipe shall be installed in a manner so as to provide for expansion and contraction as recommended by the manufacturer.

G. Plastic pipe shall be cut with a standard pipe cutter or in a manner so as to ensure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained.

H. All plastic to plastic joints shall be solvent-weld joints. Only the solvent recommended by the pipe manufacturer shall be used. All plastic pipe and fitting shall be installed as outlined and instructed by the pipe manufacturer and it shall be the Contractor's responsibility for the correct installation.

I. The solvent-weld joints shall be made in the following manner:

1. Thoroughly clean the mating pipe and fitting with a clean cloth and liquid cleaning agent.
2. Apply a uniform coat of solvent to the outside of the pipe with an approved applicator.
3. Apply solvent to the fitting in a similar manner.
4. Re-apply a light coat of solvent to the pipe and quickly insert it into the fitting.
5. Give the pipe or fitting a quarter turn to ensure even distribution of the solvent and make sure the pipe is inserted to the full depth of the fitting socket.
6. Hold in position fifteen (15) seconds.
7. Wipe off excess solvent that appears at the outer shoulder of the fitting.
8. Care should be taken so as not to use an excess amount of solvent, thereby causing an obstruction to form on the inside of the pipe. The joints shall be allowed to set at least twenty-four (24) hours before pressure is applied to the system.

J. Install concrete thrust blocks on main on turns of forty-five (45) degrees and greater.

K. All material overages at the completion of the installation are the property of the Contractor and are to be removed from the site.

L. Install pipe in dry weather when the air temperature is forty (40) degrees Fahrenheit or greater.

3.3 Electric Wiring

A. All control lines (electric wiring or hydraulic tubing) shall be laid in same trench as plastic pipe.

3.4 Sprinkler Heads

A. Unless otherwise specified or designated on the drawings, the installation of sprinkler heads shall include the excavation and backfill, the furnishing, installing and testing of risers, fittings and sprinkler heads and the removal and/or restoration of existing improvements and all other work in accordance with the plans and specifications.

B. All sprinkler heads shall be set perpendicular to the finished grades unless otherwise designated on the drawings or otherwise specified by the Landscape Architect. Sprinkler heads shall be located flush with the surrounding finished grades whether that grade is a soil level or the top of installed sod.

C. Sprinkler heads adjacent to existing walls, curbs and other paved areas, shall be set to grade unless the plan shows the head to be placed on a riser. Adjust riser height as needed after planting operations.

D. Make minor adjustments to head locations after planting operations to ensure optimum coverage.

3.5 Electric Remote Control Valves

A. Install electric remote control valves in the manner and location called for by the plan and drawings. Installation to comply with applicable codes and to be done in a workmanlike manner.

3.6 Automatic Controller

A. Install the automatic controller in the location called for by the drawings and in accordance with the manufacturer's recommendations. Installation to comply with applicable codes and to be done in a workmanlike manner.

B. Contractor shall provide adequate lighting and power surge protection for the automatic controller and electric valve solenoids.

3.7 Testing, Inspection, And Repairs

A. Do not allow or cause any of the work of this Section to be covered up or enclosed until it has been inspected and approved by the Landscape Architect.

B. After all new sprinkler piping and risers are in place and connected, for a given section and all necessary division work has been completed and prior to the installation of sprinkler heads, all control valves shall be opened and a full head of water used to flush out the system.

C. Testing of the system shall be performed after completion of each section or completion of the entire installation and any necessary repairs shall be made, at the Contractor's expense, to put the system in good working order, before final payment by the Owner.

D. Should repairs or adjustments to the irrigation system be required, the Contractor shall backfill any excavation with sandy-loam topsoil. Any landscaping disturbed by these repairs shall be repaired to meet original landscaping specifications. All surrounding landscaped areas shall be protected from excavated materials during the repair process. Sod, grass, or shrubs damaged by excavated material or equipment shall be replaced at the Contractor's expense.

3.8 Instructions

A. Attach a typewritten legend inside each controller door stating the areas covered by each remote control valve and station on the controller.

B. After the system has been completed, inspected and approved, instruct the Owner's maintenance personnel in the operation and maintenance of the irrigation system and demonstrate the contents of the manual furnished.

3.9 Inspection And Final Acceptance

A. The Landscape Architect shall inspect all work for Final Acceptance upon written request of the Contractor. The request shall be received at least seven (7) days before the anticipated date of inspection.

B. Upon completion of all repairs or renewals which may appear at that time to be necessary in the judgment of the Landscape Architect, the Landscape Architect shall certify in writing to the Owner as to the Final Acceptance of the project.

C. The Final Acceptance of the work of this Section shall constitute the beginning of the Guarantee Period for this portion of the work.

3.10 Warranty

A. Guarantee that all work, products, materials, equipment and workmanship shall remain free of defects for one calendar year from the date of Final Acceptance of the work of this Section.

B. During the Guarantee period, immediately replace all work not functioning correctly; make adjustments as necessary to maintain complete coverage: make good any other damage, loss, destruction, or failure; at no cost to the Owner.

C. Repair damage to grade, plants, and other work due to irrigation work. Replace plant materials damaged by tardiness in making the necessary repairs or replacements.

D. Warranty excludes loss due to extraordinary natural phenomena, vandalism or Owner neglect, as determined by the Landscape Architect.

END OF SECTION 02810

SECTION 02820 - FERTILIZATION & SOIL PREPARATION

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 specification sections apply to work of this section. Note: Anywhere the Drawings or Specifications refer to the Landscape Architect; these items are defined to mean the Landscape Architect or his representative.

(Note: Specifications given in this section apply both to areas where topsoil has been added and to where soil from the existing site is used).

1.2 Equipment and Materials

A. General: The Contractor shall furnish all labor, material and equipment required to complete the work described herein in strict accordance with the drawings and/or terms of the contract.

B. Materials: Soil tests shall be made to determine the exact requirements for any amendments. A reputable laboratory hired by the Contractor shall conduct soil tests.

1.3 Fertilizers

A. All fertilizers shall be uniform in composition, free flowing and suitable for application with approved equipment. Fertilizers shall be delivered to the site fully labeled according to applicable state fertilizer laws and shall bear the name, trade name or trade-mark and warranty of the producer/manufacturer.

B. Fertilizer application rates shall be determined by soil tests. Minimum 1 soil test sample per every 10,000 square feet. Tests shall then be combined and averaged for determining application rates.

C. Fertilizer shall be distributed uniformly over the entire area to be sodded.

1.4 Lime

A. Low pH Correction Materials: Lime material shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Ground limestone shall be ground to such fineness that at least 50% will pass through a 100-mesh sieve and 98% to 100% will pass through a 20-mesh sieve.

1. Lime application rates shall be determined by soil tests. Minimum of 1 soil test sample per every 10,000 square feet. Tests shall then be combined and averaged for determining application rates.

2. Lime shall be distributed uniformly over the entire area to be sodded.

B. High pH Correction Materials: Materials and application rates shall be determined by appropriate soil tests performed by a reputable laboratory. If leaching or special management is necessary, final grading will be delayed as specified.

1.5 Grading

A. Tillage: Soil amendments such as lime and fertilizer shall be uniformly mixed into the top four inches of soil by disking, harrowing or other approved method.

B. Final Grading: Any undulations or irregularities in the surface resulting from fertilization, liming, tilling, or other causes shall be smoothed prior to turfgrass installation. Flooded, washed out areas damaged or otherwise, shall be reconstructed and all grades re-established by the Contractor in accordance with the drawings, applicable specifications, or site conditions that existed prior to washout if grades are not specified.

1.6 Clean Up

A. Prior to sod installation, the surface of all soil shall be cleared of all trash, debris, stones 1 ½ inches and larger in diameter, all roots, brush, wire, grade stakes, and other objects that would interfere with planting and maintenance operations. This soil surface clearing shall take place to a depth of four inches.

PART 2 - ACCEPTANCE AND CONTRACTOR RESPONSIBILITY

Acceptance shall be given by the Landscape Architect upon satisfactory completion of the entire project. The Contractor shall be responsible for maintaining the project until final acceptance is given.

PART 3 - MEASUREMENT AND PAYMENT

There shall be no separate measurement or payment for this work, as it shall be considered incidental to and an inclusive part of both the sodding, grass seeding and plant material installation for this project.

END OF SECTION 02820

SECTION 02830 - TURFGRASS SOD

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 specification sections apply to work of this section. Note: Anywhere the Drawings or Specifications refer to the Landscape Architect; these items are defined to mean the Landscape Architect or his representative.

1.2 Labor, Materials, and Equipment

A. General: The Contractor shall furnish all labor, material and equipment required to complete the work described herein in strict accordance with the drawings and/or terms of the contract.

B. Grading: All previously established grades shall be maintained in conformance with the drawings and/or other specifications.

C. Materials:

1. Class of the turfgrass shall be Certified Turfgrass Sod.

2. This turfgrass sod shall be composed of Empire Zoysia grass. The Emprie Zoysia sod shall be used in all sodded areas along the Streetscape.

D. Topsoil: All areas of the project to receive turfgrass sod over existing soils, shall first receive a 4 inch in-place depth of tested and approved topsoil. Submit 3 copies of topsoil test report (from a reputable testing laboratory hired by the Contractor) from topsoil to be used on this project, to the Landscape Architect for approval. Application of topsoil does not relieve the Contractor from responsibilities herein described for improving existing soils and surface conditions. See Section 02820 Fertilization & Soil Preparation.

1.3 Certification Standards

A. Provide three copies of the state certification inspection certificate of the turfgrass to be used on the project to the Landscape Architect. State certification inspection assures satisfactory genetic identity and purity, overall high quality and freedom from noxious weeds as well as excessive amounts of other crop and weedy plants at time of harvest.

B. All seed used or original plant material used in turfgrass quality sod must be certified.

C. The turfgrass sod must meet the published state standards for certification.

1.4 Sod Harvesting and Material Quality

A. Thickness of Cut: Turfgrass sod shall be machine cut at a uniform soil thickness of 5/8 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness shall exclude top growth and thatch.

B. Pad Size: Individual pieces of turfgrass sod shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be plus or minus one-half inch on width and plus or minus five percent on length. Broken pads and torn or uneven ends will not be acceptable.

C. Strength of Sod Selection: Standard size sections of sod shall be strong enough that when grasped at one end, it can be picked up and handled without damage.

D. Moisture Content: Turfgrass sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

E. Mowing Height: Before harvesting, the turf shall be mowed uniformly at a height of 1 to 1 ½ inches on cool season grasses (i.e., bluegrass, rye and fescue); and ½ to 3/4 inches on warm season grasses (i.e., centipedegrass, bentgrass, zoysiagrass, and bermudagrass).

F. Time Limitations: Turfgrass sod shall be harvested, delivered and installed/transplanted within a period of 36 hours unless a suitable preservation method is approved by the Landscape Architect prior to delivery. Turfgrass sod not transplanted within this period shall be inspected and approved or rejected by the Landscape Architect prior to its installation.

G. Thatch: Turfgrass sod shall be relatively free of thatch, up to ½ inch allowable (uncompressed).

H. Diseases, Nematodes and Insects: Turfgrass sod shall be reasonably free of diseases, nematodes, and soil-borne insects. State nursery and/or plant materials laws require that all sod entering inter-state commerce be inspected and approved for sale. The inspections and approval must be made by the state agricultural department, offic of the entomologist.

I. Weeds as Applicable to Nursery Grown Turfgrass Sod: Sod shall be free of objectionable grassy and broadleaf weeds. Turfgrass sod shall be considered free of such weeds if less than five such plants are found per 100 square feet of area. Turfgrass sod will not be acceptable if it contains any of the following weeds: common bermudagrass (wiregrass), quackgrass, johnson grass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and bromegrass.

J. Inspection: The grower will submit to the purchaser prior to delivery, information as to the field location, species and percentage of purity of the turfgrass sod he intends to deliver.

1.5 Transplanting

A. Moistening the Soil: During periods of higher than optimal temperature for the species being specified and after all unevenness in the soil surface has been corrected, the soil shall be lightly moistened immediately prior to laying the turfgrass sod.

B. Starter Strip: The first row of turfgrass sod shall be laid in a straight line with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to insure that the pieces are not stretched or overlapped and that all joints are butted tightly to prevent voids that would cause air drying of the roots.

C. Sloping Surfaces: On 1:3 or greater slopes, turfgrass sod shall be laid across the angle of the slope, with staggered joints and secured by tamping, pegging or other approved methods of temporarily securing each piece.

D. Watering and Rolling: Contractor shall water the turfgrass sod immediately after transplanting to prevent excessive drying during the progress of the work. As sodding is completed in any one section, the entire area shall be lightly rolled. It shall then be thoroughly watered to a depth sufficient that the underside of the new sod pad and soil immediately below the pad are thoroughly wet. The General Contractor shall be responsible for having adequate water available at the site prior to and during installation.

PART 2 - ACCEPTANCE AND GUARANTEE

2.1 Acceptance

A. Acceptance of the transplanted turfgrass sod shall be on the completion of the entire project.

2.2 Disclaimer

A. The Contractor shall not be held liable for damages incurred to the turfgrass sod caused by materials not applied by him or under supervision nor for those caused by acts of God or vandalism.

2.3 Guarantee

A. The Contractor shall guarantee work covered by this specification to the extent that all transplanted turfgrass sod shall be uniform in color, leaf texture and shoot density and be reasonably free of visible imperfections at the time of acceptance. And the Contractor shall further guarantee the turfgrass sod against any imperfections resulting from improper installation techniques or soil preparation for a period of one year, with the beginning of the guarantee period beginning upon the date of final acceptance by the Landscape Architect.

PART 3 - MEASUREMENT AND PAYMENT

Payment for sod installation shall be per square yard installed.

END OF SECTION 02830

SECTION 02920 - TEMPORARY SEEDING AND MULCHING

PART 1 - GENERAL

1.1 Section Includes:

A. This specification covers the site preparation, furnishing and applying agricultural limestone, fertilizer, seed, and mulch, labor and equipment necessary for seeding unimproved areas encountered during construction.

1.2 Related Sections:

A. Section 02250 - Trenching, Backfill and Compaction

1.3 Unit Prices:

A. Seeding and mulching shall be paid for by one of the following methods:

1. Square yard
2. Acre

B. The Contractor shall refer to the Bid Schedule for the appropriate unit of payment.

C. All methods of payment shall include preparing the area for seeding, including but not limited to furnishing and applying agricultural limestone, fertilizer, seeding and mulching, water as required, and all labor and equipment necessary for a complete application and maintenance.

1.4 Performance Requirements:

A. The acceptance of designated seeded areas will be based on verification of a satisfactory stand of grass in the season for each seed species required by the mix designated for use. If a satisfactory stand of grass is not established, the area shall be re-seeded without additional cost to the Owner. Such re-seeding shall be repeated as many times as necessary to establish a satisfactory stand of grass.

B. A satisfactory stand is defined as a cover of healthy, living plants, after true leaves are formed, of the seed species required by the mix designated for use in which gaps larger than five (5) inches square do not occur.

1.5 Maintenance:

A. The Contractor shall maintain the seeded area until final acceptance of the work.

B. All costs associated with application of water during this construction and maintenance period shall be the responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 Materials:

A. Seed: All seed shall meet the requirements of these specifications and comply with the current Seed Law, Act No. 424, General Acts 1963, and rules and regulations promulgated thereunder and any revision of the Act. They shall be tested within nine months prior to use in accordance with the latest edition of Rules for Seed Testing, approved by the Association of Official Seed Analysis. The information on the seed tag of each bag of seed will be inspected and reviewed by the Engineer prior to planting and as requested. A representative sample of seed will be furnished for testing to determine the correctness of labeling. The purity and germination of hard seed shall not be less than the percentage tabulated below:

TYPE	PURITY	GERMINATION AND HARD SEED
Kentucky 31 Tall Fescue	98%	85%
Hulled Common Bermuda	97%	85%
Abruzzi Rye	98%	80%
Pensacola Bahaigrass	90%	85%

No seed shall contain more than 1% weed seed. Limitations of noxious weed seeds will be as specified by rules and regulations for administration of the current State Seed Law.

B. Agricultural Limestone: The limestone shall have a neutralizing value of 90% calcium carbonate or better and meet the following gradation requirements:

Sieve Size #10, 90% by weight passing.
Sieve Size #60, 50% by weight passing.

C. Fertilizer: The fertilizer shall be a commercial grade, complying with the current State Fertilizer Laws. Fertilizer shall be of a commonly accepted analysis and conform to the following table:

PERCENT BY WEIGHT

TYPE	NITROGEN	PHOSPHORUS	POTASH
15-0-15	15		15
13-13-13	13	13	13
10-10-10	10	10	10
8-8-8	8	8	8
0-14-14	0	14	14
4-12-12	4	12	12
4-16-8	4	16	8
Cottonseed Meal	6.56		
Super Phosphate		18.0	
Ammonium Nitrate	33.5		
Ammonium Sulphate	20.5		
Nitrate of Soda	16.0		
Muriate of Potash			60.0

If the fertilizer is furnished from bulk storage, the Contractor shall furnish the supplier certification of analysis and weight. A representative sample of the fertilizer shall be furnished for chemical analysis at the discretion of the Engineer.

D. Mulch materials shall be wheat, oat, barley, or rye straw or tame hay. The materials shall be air dried and shall not be spoiled or rotted to the extent that plant stems are caked together. Mulch material containing noxious weed seeds will not be acceptable. The Contractor shall provide a method satisfactory to the Engineer for determining weight of mulch furnished.

E. Water shall be potable and free of substances that are harmful to the growth of plantings.

F. Hydroseeding and mulching shall be Conowed Fibers 2500, or approved equal.

2.2 Equipment:

A. Spreaders shall be mechanically operated or hand operated, capable of providing a uniform application rate over the area to be covered. Broadcast spreading by hand will not be allowed.

2.3 Seeding Mixtures:

A. Seeding mixtures shall be as specified by the Supplementary Conditions. Seeding mixtures shall be classed according to the time of year when seeding will take place.

B. If no seeding mixtures are specified by the Supplementary Conditions, the following mixtures and application rates shall apply:

SEED	APPLICATION RATE/ACRE
Kentucky 31 Tall Fescue	40 Pounds
Hulled Common Bermuda Grass	8 Pounds
Pensacola Bahiagrass	30 Pounds
Abruzzi Rye	30 Pounds

PART 3 - EXECUTION

3.1 Preparation:

A. The Contractor shall dress the area to be seeded to a reasonably smooth surface, sloped to drain, and tie with surrounding contours, sidewalks, drives, etc.

B. The Contractor shall break all lumps, clods, and crusty surfaces by tillage, discing or other methods approved by the Engineer. All boulders, stumps, roots and other particles that would interfere with a mowing operation shall be removed.

3.2 Application:

A. Fertilizer shall be spread uniformly in sufficient quantity to provide at least 120 pounds of nitrogen, 120 pounds of available phosphoric acid, and 120 pounds of total potash per acre as computed from the nominal contents of fertilizing ingredients.

B. Agricultural lime shall be uniformly and evenly applied at a rate of 4,000 pounds per acre.

C. The fertilizer and lime shall be thoroughly mixed into the soil by discing, tilling or other methods approved by the Engineer.

D. The Contractor shall take precautionary measures when applying fertilizer and lime around buildings, sidewalks and drives.

E. Seed shall be uniformly and evenly spread over the area at rates specified in the supplemental conditions or in Paragraph 2.03.B of this Specification.

F. Mulch shall be applied at the rate of 1-1/2 tons per acre. Mulching shall be done within three days after seeding.

3.3 Cleaning:

A. The Contractor shall clean drives, buildings, sidewalks and other areas of all construction debris and equipment, including seed, fertilizer, lime, mulch, etc.

END OF SECTION 02920

SECTION 02940 - PAINTING AND STRIPING

PART 1 - GENERAL

1.1 Work Included

A. This section covers all temporary and permanent painting and striping of the parking areas, roadways, and pedestrian crosswalks.

1.2 Reference Specifications

A. All materials, equipment, application methods, cleaning and installation shall be in accordance with Alabama Department of Transportation Standard Specifications, Latest Edition, Sections 701, 856, and 857, except as modified herein.

1.3 Application

A. Prepare surface in accordance with ALDOT 701.

B. Rate of application shall not exceed 80 square feet per gallon.

D. Temporary painting shall be done on all areas including striping, pedestrian walkways and parking within the roadways immediately after completion of the asphalt placement and after utility installations that eliminate substantial portions of the existing striping. Permanent painting and thermoplastic striping of the roadways and parking lot shall be done after the asphalt has cured for 30 days.

END OF SECTION 02940

SECTION 02945 - CAST-IN-PLACE CONCRETE - CIVIL

PART 1 - GENERAL

1.1 Omit

1.2 Summary

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the Storm Structures.

1.3 Definitions

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

PART 2 - SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Material Certificates: For each of the following, signed by manufacturers:
1. Curing compounds.
2. Bonding agents.
3. Repair materials.

E. Field quality-control test and inspection reports.

2.2 Quality Assurance

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

2.3 Delivery, Storage, And Handling

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 3 - PRODUCTS

3.1 Manufacturers

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

3.2 Form-Facing Materials

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

    a. High-density overlay, Class 1 or better.
    b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
    c. Structural 1, B-B or better; mill oiled and edge sealed.
    d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

D. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

3.3 Steel Reinforcement

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

3.4 Reinforcement Accessories

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut bars true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

3.5 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I or II, Supplement with the following:

   a. Fly Ash: ASTM C 618, Class C or F.
   b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

3.6 Admixtures

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

3.7 Curing Materials

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Available Products:

a. Axim Concrete Technologies; Cimfilm.
b. Burke by Edoco; BurkeFilm.
c. ChemMasters; Spray-Film.
d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Aquafilm.
e. Dayton Superior Corporation; Sure Film.
f. Euclid Chemical Company (The); Eucobar.
g. Kaufman Products, Inc.; Vapor Aid.
h. Lambert Corporation; Lambco Skin.
i. L&M Construction Chemicals, Inc.; E-Con.
j. MBT Protection and Repair, Div. of ChemRex; Confilm.
k. Meadows, W. R., Inc.; Sealtight Evapre.
l. Metalcrete Industries; Waterhold.
m. Nox-Croto Products Group, Kinsman Corporation; Monofilm.
n. Sika Corporation, Inc.; SikaFilm.
o. Symons Corporation, a Dayton Superior Company; Finishing Aid.
p. Unitex; Pro-Film.
q. US Mix Products Company; US Spec Monofilm ER.
r. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

1. Available Products:

a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
b. Burke by Edoco; Aqua Resin Cure.
c. ChemMasters; Safe-Cure Clear.
d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; W.B. Resin Cure.
e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
f. Euclid Chemical Company (The); Kurez DR VOX.
g. Kaufman Products, Inc.; Thinfilm 420.
h. Lambert Corporation; Aqua Kure-Clear.
i. L&M Construction Chemicals, Inc.; L&M Cure R.
j. Meadows, W. R., Inc.; 1100 Clear.
k. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
l. Symons Corporation, a Dayton Superior Company; Resi-Chem Clear Cure.
m. Tamms Industries, Inc.; Horncure WB 30.
n. Unitex; Hydro Cure 309.
o. US Mix Products Company; US Spec Maxcure Resin Clear.
p. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.

3.8 Repair Materials

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

3.9 Concrete Mixtures, General

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials:

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Ground Granulated Blast-Furnace Slag: 50 percent.
4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
5. Silica Fume: 10 percent.
6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to .30 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

3.10 Concrete Mixtures For Building Elements

A. Proportion normal-weight concrete mixture as follows:
   1. Minimum Compressive Strength: 4000 psi at 28 days.
   2. Maximum Water-Cementitious Materials Ratio: 0.45
   3. Slump Limit: 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1-inch.
   4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.

3.11 Fabricating Reinforcement

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

3.12 Concrete Mixing

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.

   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 4 - EXECUTION

4.1 Formwork

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

   1. Class A, 1/8 inch for smooth-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

   1. Install keyways, reglets, recesses, and the like, for easy removal.
   2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

4.2 Embedded Items

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

4.3 Removing And Reusing Forms

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

4.4 Shores And Reshores

A. Comply with ACI 318 (ACI 318M) and ACI 301 for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

4.5 Steel Reinforcement

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

4.6 Joints

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

4.7 Concrete Placement

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

4.8 Finishing Formed Surfaces

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

4.9 Miscellaneous Concrete Items

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

4.10 Concrete Protecting And Curing

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

   a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

4.11 Joint Filling

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semi-rigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

4.12 Concrete Surface Repairs

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Engineer's approval.

4.13 Field Quality Control

A. Testing and Inspecting: Owner may engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Verification of use of required design mixture.
4. Concrete placement, including conveying and depositing.
5. Curing procedures and maintenance of curing temperature.
6. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of three standard cylinder specimens for each composite sample.

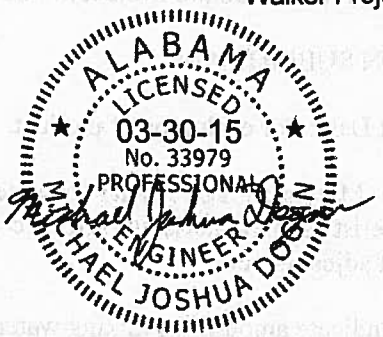
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.

b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Engineer.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

END OF SECTION 02945



SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mix concrete manufacturer.
   d. Concrete Subcontractor.
   e. Special concrete finish Subcontractor.

2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, steel reinforcement installation, concrete repair procedures, and concrete protection.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the Architect.

E. Samples: For waterstops vapor retarder.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer manufacturer testing agency.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Waterstops.
6. Curing compounds.
7. Floor and slab treatments.
8. Bonding agents.
9. Adhesives.
10. Vapor retarders.
11. Semirigid joint filler.
12. Joint-filler strips.
13. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:

1. Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.

E. Field quality-control reports.

F. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

1.10 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301 (ACI 301M).

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and as follows:

1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301 (ACI 301M).
2. ACI 117 (ACI 117M).

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.

C. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

D. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.

3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

C. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, flat sheet.

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.5 CONCRETE MATERIALS

A. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I/II, gray.
2. Fly Ash: ASTM C 618, Class F or C.
3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
4. Blended Hydraulic Cement: ASTM C 595/C 595M, Type IS, portland blast-furnace slag cement.
5. Silica Fume: ASTM C 1240, amorphous silica.

B. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1 inch (25 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Lightweight Aggregate: ASTM C 330/C 330M, 3/4-inch (19-mm) nominal maximum aggregate size.

D. Air-Entraining Admixture: ASTM C 260/C 260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.

1. Available Products:
   a. Euclid Chemical Company (The); Eucon CIA.
   b. Grace Construction Products, W. R. Grace & Co.; DCI.
   c. Master Builders, Inc.; Rheocrete CNI.
   d. Sika Corporation; Sika CNI.

G. Water: ASTM C 94/C 94M and potable.

2.6 WATERSTOPS

A. Flexible Rubber Waterstops: CE CRD-C 513, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

1. Available Manufacturers:
   a. Greenstreak.
   b. Progress Unlimited, Inc.
   c. Williams Products, Inc.
2. Profile: Flat dumbbell with center bulb.
3. Dimensions: 6 inches by 3/8 inch thick (150 mm by 10 mm thick); nontapered.

2.7 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class C. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.

   a. Fortifiber Corporation; Moistop Plus.
   b. Raven Industries Inc.; Dura Skrim 6.
   c. Reef Industries, Inc.; Griffolyn Type-65.
   d. Stego Industries, LLC; Stego Wrap, 10 mils.
   e. Nu-Age 10+ Polyethylene Sheet

B. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils (0.25 mm) thick.

2.8 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Available Products:

a. Axim Concrete Technologies; Cimfilm.
b. Burke by Edoco; BurkeFilm.
c. ChemMasters; Spray-Film.
d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Aquafilm.
e. Dayton Superior Corporation; Sure Film.
f. Euclid Chemical Company (The); Eucobar.
g. Kaufman Products, Inc.; Vapor Aid.
h. Lambert Corporation; Lambco Skin.
i. L&M Construction Chemicals, Inc.; E-Con.
j. MBT Protection and Repair, Div. of ChemRex; Confilm.
k. Meadows, W. R., Inc.; Sealtight Evapre.
l. Metalcrete Industries; Waterhold.
m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
n. Sika Corporation, Inc.; SikaFilm.
o. Symons Corporation, a Dayton Superior Company; Finishing Aid.
p. Unitex; Pro-Film.
q. US Mix Products Company; US Spec Monofilm ER.
r. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

1. Available Products:

a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
b. Burke by Edoco; Aqua Resin Cure.
c. ChemMasters; Safe-Cure Clear.
d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; W.B. Resin Cure.
e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
f. Euclid Chemical Company (The); Kurez DR VOX.
g. Kaufman Products, Inc.; Thinfilm 420.

h. Lambert Corporation; Aqua Kure-Clear.
i. L&M Construction Chemicals, Inc.; L&M Cure R.
j. Meadows, W. R., Inc.; 1100 Clear.
k. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
l. Symons Corporation, a Dayton Superior Company; Resi-Chem Clear Cure.
m. Tamms Industries, Inc.; Horncure WB 30.
n. Unitex; Hydro Cure 309.
o. US Mix Products Company; US Spec Maxcure Resin Clear.
p. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

1. Available Products:

a. Anti-Hydro International, Inc.; AH Clear Cure WB.
b. Burke by Edoco; Spartan Cote WB II.
c. ChemMasters; Safe-Cure & Seal 20.
d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Cure and Seal WB.
e. Dayton Superior Corporation; Safe Cure and Seal (J-18).
f. Euclid Chemical Company (The); Aqua Cure VOX.
g. Kaufman Products, Inc.; Cure & Seal 309 Emulsion.
h. Lambert Corporation; Glazecote Sealer-20.
i. L&M Construction Chemicals, Inc.; Dress & Seal WB.
j. Meadows, W. R., Inc.; Vocomp-20.
k. Metalcrete Industries; Metcure.
l. Nox-Crete Products Group, Kinsman Corporation; Cure & Seal 150E.
m. Symons Corporation, a Dayton Superior Company; Cure & Seal 18 Percent E.
n. Tamms Industries, Inc.; Clearseal WB 150.
o. Unitex; Hydro Seal.
p. US Mix Products Company; US Spec Hydrasheen 15 percent
q. Vexcon Chemicals, Inc.; Starseal 309.

G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

1. Available Products:

a. Burke by Edoco; Spartan Cote WB II 20 Percent.
b. ChemMasters; Safe-Cure Clear.
c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; High Seal.
d. Dayton Superior Corporation; Safe Cure and Seal (J-19).
e. Euclid Chemical Company (The); Diamond Clear VOX.
f. Kaufman Products, Inc.; SureCure Emulsion.
g. Lambert Corporation; Glazecote Sealer-20.
h. L&M Construction Chemicals, Inc.; Dress & Seal WB.
i. MBT Protection and Repair, Div. of ChemRex; MasterKure-N-Seal VOC.

j. Meadows, W. R., Inc.; Vocomp-20.
k. Metalcrete Industries; Metcure 0800.
l. Nox-Crete Products Group, Kinsman Corporation; Cure & Seal 200E.
m. Sonneborn, Div. of ChemRex; Kure-N-Seal.
n. Symons Corporation, a Dayton Superior Company; Cure & Seal 18 Percent E.
o. Tamms Industries, Inc.; Clearseal WB STD.
p. Unitex; Hydro Seal 18.
q. US Mix Products Company; US Spec Radiance UV-25
r. Vexcon Chemicals, Inc.; Starseal 0800.

H. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. Available Products:

a. Burke by Edoco; Cureseal 1315.
b. ChemMasters; Spray-Cure & Seal Plus.
c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315.
d. Dayton Superior Corporation; Day-Chem Cure and Seal (J-22UV).
e. Euclid Chemical Company (The); Super Diamond Clear.
f. Kaufman Products, Inc.; Sure Cure 25.
g. Lambert Corporation; UV Super Seal.
h. L&M Construction Chemicals, Inc.; Lumiseal Plus.
i. Meadows, W. R., Inc.; CS-309/30.
j. Metalcrete Industries; Seal N Kure 0.
k. Sonneborn, Div. of ChemRex; Kure-N-Seal 5.
l. Tamms Industries, Inc.; LusterSeal 300.
m. Unitex; Solvent Seal 1315.
n. US Mix Products Company; US Spec CS-25
o. Vexcon Chemicals, Inc.; Certi-Vex AC 1315

I. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. Available Products:

a. Burke by Edoco; Cureseal 1315 WB.
b. ChemMasters; Polyseal WB.
c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315 WB.
d. Euclid Chemical Company (The); Super Diamond Clear VOX.
e. Kaufman Products, Inc.; Sure Cure 25 Emulsion.
f. Lambert Corporation; UV Safe Seal.
g. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.
h. Meadows, W. R., Inc.; Vocomp-30.
i. Metalcrete Industries; Metcure 30.
j. Symons Corporation, a Dayton Superior Company; Cure & Seal 31 Percent E.
k. Tamms Industries, Inc.; LusterSeal WB 300.
l. Unitex; Hydro Seal 25.
m. US Mix Products Company; US Spec Radiance UV-25.

n. Vexcon Chemicals, Inc.; Vexcon Starseal 1315.

2.9 RELATED MATERIALS

A. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 according to ASTM D 2240.

B. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

D. Reglets: Fabricate reglets of not less than 0.022-inch- (0.55-mm-) thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

E. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch (0.85 mm) thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.10 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than **[4100 psi (29 MPa)]** at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6.4 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.11 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301 (ACI 301M).

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Slag Cement: 50 percent.
4. Combined Fly Ash or Pozzolan and Slag Cement: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
5. Silica Fume: 10 percent.
6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
7. Combined Fly Ash or Pozzolans, Slag Cement, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Slump Limit: 3" to 5".
4. Air Content: 3% to 5%.

B. Foundation Walls: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Slump Limit: 6-8 inches (200 mm) for concrete with verified slump of 3 to 5 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture.
4. Air Content: 3% to 5%.

C. Slabs-on-Grade: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Minimum Cementitious Materials Content: 520 lb/cu. yd. (309 kg/cu. m).
4. Slump Limit: 6-8 inches (200 mm) for concrete with verified slump of 3 to 5 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture..
5. Air Content: 3% to 5%.

D. Suspended Slabs: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Minimum Cementitious Materials Content: 540 lb/cu. yd. (320 kg/cu. m).
4. Slump Limit: 6-8 inches (200 mm) for concrete with verified slump of 3 to 5 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture..
5. Air Content: 3% to 5%.

2.13 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.14 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).

3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M).

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORING AND RESHORING INSTALLATION

A. Comply with ACI 318 (ACI 318M) and ACI 301 (ACI 301M) for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 VAPOR-RETARDER INSTALLATION

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

3.6 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
3. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
5. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 WATERSTOP INSTALLATION

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.9 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 (ACI 301M).

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301 (ACI 301M).
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.10 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

C. Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform

color and texture. Do not apply cement grout other than that created by the rubbing process.

2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix 1 part portland cement to 1-1/2 parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix 1 part portland cement and 1 part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.11 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in one direction.

1. Apply scratch finish to surfaces indicated and to receive mortar setting beds for bonded cementitious floor finishes.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

2. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch (4.8 mm).

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

G. Slip-Resistive Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:

1. Uniformly spread 25 lb/100 sq. ft. (12 kg/10 sq. m) of dampened slip-resistive aggregate over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
2. After broadcasting and tamping, apply float finish.
3. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aggregate.

3.12 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases as indicated, and extend base not less than 6 inches (150 mm) in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.13 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 (ACI 301M) for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

   a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.14 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least [**one**] [**six**] month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.15 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete. Limit cut depth to 3/4 inch (19 mm). Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.16 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below or 80 deg F (27 deg C) and above, and one test for each composite sample.
5. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
6. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
    a. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 033000

SECTION 16010 - GENERAL ELECTRICAL WORK

PART 1 – GENERAL

1.1 GENERAL CONDITIONS

A. The accompanying General Conditions shall apply to and form a part of this Section.

1.2 GENERAL REQUIREMENTS

A. Carefully examine General Conditions, other specification Sections, and other drawings (in addition to electrical), in order to be fully acquainted with their effect on electrical work.

B. Do all work in compliance with following applicable codes:

1. National Electrical Code (NEC).
2. National Electrical Safety Code (NESC).
3. National Electrical Manufacturers Association (NEMA).
4. American National Standards Institute (ANSI).
5. Insulated Cable Engineers Association (ICEA).
6. Institute of Electrical and Electronic Engineers (IEEE).
7. American Society for Testing and Materials (ASTM).
8. Joint Industrial Council (JIC).
9. Illumination Engineering Society (IES).
10. Applicable Local Codes.
11. Americans with Disabilities Act (ADA).

C. Do all work in compliance with laws and ordinances and local authorities having jurisdiction and, where applicable, utility companies. Obtain and pay for any and all required permits, inspections, certificates of inspections and approval, and the like, and deliver such certificates to the Architect.

D. Cooperate with other trades and contractors at job. Perform work in such manner and at such times as not to delay work of other trades. Complete all work as soon as the condition of the structure and installation of equipment will permit. Patch, in a satisfactory manner and by the proper craft, any work damaged by electrical work.

E. All equipment (wiring devices, light fixtures, panelboards, disconnect switches, conductors, raceways, boxes, cabinets, circuit breakers, low voltage equipment, auxiliary systems, motors, machines, etc.) used for this project shall be tested by Underwriter's Laboratories, Inc and have "UL" nameplate.

1.3 DEFINITIONS

1. Provide: Furnish all materials, hardware, equipment, labor and services required for the installation of complete and properly working equipment and/or systems as shown on the drawings and described herein.

2. Wire: Furnish all conduit, wiring, materials, hardware, equipment, labor and services required for complete and proper operation and/or control of equipment and/or systems as shown on the drawings and described herein.

3. Install: Furnish all labor.

4. Furnish: Furnish all conduit, wiring, materials, hardware, equipment.

5. Work: A complete and properly working installation of materials for equipment and/or systems as shown on the drawings and described herein.

6. AWG: American Wire Gage.

7. NEC: National Electrical Code - latest edition or the latest edition adopted by the local authorities having jurisdiction where applicable.

8. NFPA: National Fire Protection Association.

9. OSHA: Occupation Safety and Health Administration.

10. UL: Underwriter's Laboratories, Inc.

11. NEMA: National Electrical Manufacturers Association.

12. IEEE: Institute of Electrical and Electronic Engineers.

13. ADA: The Americans with Disabilities Act.

14. Concealed: Rendered inaccessible by the structure or finish of the building.

15. Exposed: On or attached to the surface or behind panels designed to allow access.

16. OFCI: Owner furnish, contractor install.

17. OFOI: Owner furnish, owner install.

18. NIC: Not in contract.

1.4 DRAWINGS

A. The drawings indicate only diagrammatically the extent, general character and approximate location of work. Where work is indicated but with minor details omitted, furnish and install it complete and so as to perform its intended functions. For building details and mechanical equipment follow architectural, structural, and mechanical drawings and fit electrical work thereto.

B. Take finish dimensions at the job site in preference to scale dimensions.

C. Except as above noted, make no changes or deviations from the work as shown or specified except on written order of the Engineer.

D. Obtain from manufacturer's data on all equipment, the dimensions of which may affect electrical work. Use this data to coordinate proper service characteristics, entry locations, etc., and to ensure minimum clearances are maintained.

1.5 QUALIFICATIONS OF CONTRACTOR

A. The electrical contractor shall have had experience of at least the same size and scope as this project, on at least two other projects, within the last 5 years in order to be qualified to bid this project. This qualification shall also apply to his subcontractors.

B. Workmen shall be experienced in their respective trade. Workmanship of installed work shall be first class and will be so judged by the Architect/Engineer. Substandard work shall be removed and replaced.

C. Qualifications stated for the electrical contractor shall also apply to any subcontractors employed by the electrical contractor during the course of this work.

1.6 SITE VISIT

A. The Bidders shall visit the site to thoroughly familiarize themselves with existing conditions prior to submitting their bid. No allowances will be made for lack of knowledge of existing conditions.

1.7 ELECTRICAL SERVICE CHARACTERISTICS

A. Main services shall be as shown on drawings.

1.8 WARRANTY

A. See GENERAL CONDITIONS (one-Year warranty of conformance with drawings and specifications).

B. In addition to the foregoing warranty, Contractor shall and does hereby warrant all materials and equipment furnished under this Division of the Specifications to be free from defects and to function or operate satisfactorily for one year after final acceptance of the work, and that any items not meeting this requirement will be made good by him without cost to owner, provided such defects or failures are not due to abuse, neglect, or lack of reasonable and ordinary maintenance.

PART 2 - PRODUCTS

2.1 APPROVED MATERIALS AND DEVICES

A. Unless otherwise specified, provide only new, standard first grade materials throughout, conforming to standards established by Underwriter's Laboratories, Inc., and so marked and labeled, together with manufacturer's brand or trademark. All equipment will be subject to approval of Engineer before installation. All like items shall be of one manufacture.

2.2 ELECTRICAL EQUIPMENT

A. Where shown on the drawings or specified herein, furnish and install electrical equipment.

B. Furnish all materials, hardware, equipment, labor and services required for the installation of complete and properly working installations as shown on the drawings and described herein.

C. References in these specifications to a particular manufacturer or model number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. Equipment by manufacturers other than those specified shall be submitted for review in accord with Section 16011.

D. All equipment shall be installed by qualified workmen who shall have reviewed all manufacturer's data for purposes of coordinating service characteristics, entry locations, mounting requirements, dimensions, etc.

E. The contractor shall cooperate with the Owner, other trades, etc. for coordination of their requirements or the effects of the installed equipment on the overall project.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. The work shall be in accordance with the NEC and the rules and regulations of local bodies having jurisdiction.

B. All work shall be executed in a workmanlike manner and shall present a neat and mechanical appearance upon completion.

C. Care shall be exercised that all items are plumb, straight, level.

D. Care shall be exercised so that not less than code clearance is allowed for all panels, switchboards, etc. Do not allow other trades to infringe on this clearance. Minimum code clearance shall be as required by Article 110 of the NEC.

E. Care shall be exercised that no piping, ducts, or equipment foreign to the electrical equipment or architectural appurtenances shall be allowed to be installed in, enter or pass through the exclusively dedicated spaces above, adjacent to and below switchboards and panelboards as set forth in Article 384, paragraph 4, of the NEC.

F. Balance load as equally as practicable on service and all feeders, circuits and panelboard buses.

3.2 ACCEPTANCE TESTING

A. Upon completion of work, the entire wiring system shall be tested, and shall be shown to be in perfect working condition in accordance with the intent of the specifications and drawings. It shall be the responsibility of the Electrical Contractor to have all systems ready for operation and to have an electrician available to operate same in accordance with and under the supervision of the inspection representative of the Architect/Engineer. The electrician shall be available to assist in removal of panelboard fronts, etc., to permit inspection as required.

3.3 TESTS

A. Upon completion of the work, test the individual systems including all services, feeders, branches, outlets, lighting, motors, apparatus and appliance, with a 1000 VDC insulation tester (with a 0-200 megohm full scale). All conductors shall have insulation tested when the wiring system is complete and a log kept of the circuit name, date and megger readings.

B. Test each receptacle with a Woodhead Company "Ground Loop Impedance Tester," and record the reading adjacent to the device on "As-Built" drawings.

C. Provide all instruments, labor and materials required for tests designated.

D. All test reports shall be typed and signed by the person who made the tests.

3.4 TEMPORARY POWER

A. The electrical contractor shall provide temporary electrical wiring for construction if required. The temporary service shall be a minimum of 200 amperes, three phase, four wire, 120/240 volts (verify voltage and amperage with general contractor) fused at main disconnect. All receptacles on this temporary service shall be protected by ground fault interruptible circuit breakers. Verify the temporary power with general contractor before bid. Power may be through utility or onsite temporary generator.

END OF SECTION 16010

SECTION 16011 - ELECTRICAL - SCOPE OF WORK

PART 1 – GENERAL

1.1 WORK REQUIRED

A. Arrange with local utility companies for such services as shown or herein specified.

B. Removal or relocation of all electrical services located on or crossing through the project property, either above or below grade, which would obstruct the construction of the project or conflict in any manner with the completed project or any code pertaining thereto.

C. Complete power systems and auxiliary systems as shown or herein specified.

D. Furnishing and installation of all electrical items shown on drawings or herein specified, unless shown or specified otherwise.

E. Connection of all equipment requiring electrical connection, mentioned in this Section or shown on drawings, whether furnished by electrical contractor or others.

F. Complete system of conduit raceways for power and auxiliary systems.

G. Installation of Owner provided light poles, pole bases and pole mounted IT cabinets.

PART 2 - PRODUCTS

2.1 PROPOSED SUBSTITUTES

A. Submit to Engineer ten (10) days prior to bid date three (3) copies of any items which are proposed as substitutes for those specified.

2.2 SHOP DRAWINGS AND CATALOG DATA

A. Submit to Engineer within fifteen (15) days after award of contract, prior to purchasing, six (6) copies of manufacturer's shop drawings and catalog data for the items listed below.

B. All shop drawings of a specific item or system shall be in one submittal and shall be marked to clearly identify the manufacturer, the intended use of the item, and if not readily apparent, the intended location for installation of the item.

C. Shop drawings of all power equipment shall contain exact details of device placement, phasing and numbering, in form of elevations, for each piece of equipment.

D. Shop drawings submittals shall include:

Wireways
Panelboard
Cabinets
Cable
Wiring Devices
Engraved Plates
Equipment Coordination Data Sheets
As required by individual sections of these Specifications

E. Shop Drawings for the following items may consist of typewritten lists, listing manufacture with description, to be used (one only for each item).

Building Wire

Conduit: Rigid, I.M.C., E.M.T.
Conduit, PVC
EMT Couplings and Connectors
Wire Connectors

F. Obtain manufacturer's data on all equipment requiring electrical service and review it for purposes of coordinating service characteristics, entry locations, mounting requirements, dimensions, etc. Verify that the electrical service requirements are as shown on the electrical drawings or, if at variance to that shown, indicate the area of nonconformance. Submit one copy of this data with shop drawings, along with a statement of the following:

1. The information contained in the submittal includes data on all equipment within the scope of this project which will require electrical service or coordination with electrical work.

2. The information contained in the submittal has been reviewed by the electrical contractor, with the general contractor's project manager, and that the electrical service requirements will be coordinated with the information obtained from the manufacturer's data.

The statement shall identify the source of the information and shall be signed by the representative of the electrical contractor responsible for obtaining and coordinating the information and the general contractor's project manager.

G. Shop drawings shall include large scale plan layouts and elevations of each electrical equipment room or other space having panelboards, switchboards, or major electrical equipment installed therein. Drawings shall be one-half inch equal one foot scale minimum and shall show all required clearances and all pertinent conditions.

H. None of the above items shall be installed until shop drawings or catalog data has been accepted in writing. Any listed item not submitted even if specified shall be considered not acceptable and shall be removed if directed.

PART 3 – EXECUTION

3.1 CLEARANCE WITH UTILITIES

A. It shall be the responsibility of this Contractor, prior to bid, to reaffirm with the utility companies involved that the location, arrangement (and with Power Company: voltage, phase, and metering required) and connections to the utility service are in accordance with their regulations and requirements. If their requirements are at variance with these drawings and specifications, the contract price shall include any additional cost necessary to meet those requirements without extra cost to the Owner after a contract is entered into.

B. On many projects the utility company may levy charges due to location, size or type service involved. The Contractor shall be responsible for these charges, unless such charges are not available prior to bid and Contractor so documents at the bid opening.

C. Should the above cost not be available, prior to bid, the Contractor shall submit a letter so stating with his bid.

D. Arrange with utility companies for such services as shown or herein specified and installation of meter where shown. Furnish with shop drawings a signed document from utility companies describing the location and type of services to be furnished and any requirements they may have. This document shall be signed for each utility company by a person responsible for granting such services.

E. Pay all charges (if any) in connection therewith, including permanent meter deposit. Meter deposit will be refunded to the Contractor at time of the Owner's acceptance.

3.2 EXCAVATION, CUTTING, PATCHING

A. Perform all excavating and cutting as required to receive electrical work, and after inspection and approval of work by Engineer, do all required backfilling, patching and repairing. Obtain specific approval of Engineer before cutting into any structural members.

B. For all such work employ competent workmen, and finish in a neat and workmanlike manner, equal to quality and appearance of adjacent work.

3.3 PAINTING:

A. Finish painting of any exposed raceways is not included in this Section. (See Painting and Finishing Section).

3.4 IDENTIFICATION

A. Identification nameplates shall be laminated plastic.

B. Each panelboard shall be equipped with a nameplate with 1/4" minimum letters.

C. Each individual mounted switch and/or any other control or protective device shall be equipped with a nameplate with 1/4" minimum letters. Nameplates on fusible equipment shall state fuse size.

D. Each branch circuit in a switchboard shall be identified.

1. Panelboards with covers and directory pockets shall have typewritten directories.

E. All nameplates shall be red micarta with white core for emergency power and white micarta with black core for normal power.

Nameplate for panelboards, disconnect switches, individual mounted circuit breakers shall include equipment designation or load served, voltage, phase and source of feed. Typical nameplate:

PE-X
120/240V 2PH 3W
FED FROM TR-XX

F. Each junction box shall be marked to identify the system it serves. The following color coding system shall be spray painted on each box cover:

1. Normal Power System - Galvanized

G. Junction boxes containing power circuits shall have associated panel and circuit numbers printed on the cover.

3.5 STORAGE OF MATERIALS

A. Store all materials to prevent damage from rust, corrosion, physical injury, etc.

B. Keep site clean of accumulation of cartons, trash, debris, etc.

3.6 "AS BUILT" DRAWINGS

A. A set of electrical drawings shall be kept on the job site on which all changes from the contract drawings are recorded, in red, on a day-to-day basis.

3.7 OPERATIONS AND MAINTENANCE INSTRUCTION

A. At the completion of the job, the electrical contractor shall turn over to the Owner:

One (1) set of mylar reproducible drawings marked "as built" and reflecting the actual work done.

One (1) set of prints made from bond drawings shall be furnished to the Engineer.

Three (3) sets of all equipment catalog and maintenance data.

Three (3) sets of shop drawings on all equipment requiring same.

Spare lamps

Spare fuses

B. The contractor shall explain and demonstrate all systems to the Owner's representative.

END OF SECTION 16011

SECTION 16075 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Underground-line warning tape.
5. Warning labels and signs.
6. Instruction signs.
7. Equipment identification labels.
8. Miscellaneous identification products.

1.3 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

B. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.

C. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

A. Comply with ANSI A13.1 and IEEE C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's

wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 POWER RACEWAY IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

B. Colors for Raceways Carrying Circuits at 600 V or Less:

1. Black letters on a yellow field.
2. Legend: Indicate voltage and system or service type

C. Colors for Raceways Carrying Circuits at More Than 600 V:

1. Black letters on an orange field.
2. Legend: "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch- (75-mm-) high letters on 20-inch (500-mm) centers.

D. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

E. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

G. Tape and Stencil for Raceways Carrying Circuits More Than 600 V: 4-inch- (100-mm-) wide black stripes on 10-inch (250-mm) centers diagonally over orange background that extends full length of raceway or duct and is 12 inches (300 mm) wide. Stop stripes at legends.

H. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch (50 by 50 by 1.3 mm), with stamped legend, punched for use with self-locking cable tie fastener.

I. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.2 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Colors for Raceways Carrying Circuits at 600 V and Less:

1. Black letters on a green field.
2. Legend: Indicate voltage and system or service type.

C. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

D. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches (50 mm) wide; compounded for outdoor use.

2.3 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch (50 by 50 by 1.3 mm), with stamped legend, punched for use with self-locking cable tie fastener.

D. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

E. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.4 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

D. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

E. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

F. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.5 FLOOR MARKING TAPE

A. 2-inch- (50-mm-) wide, 5-mil (0.125-mm) pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

2.6 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE, DANGER.
3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.

C. Tag:

1. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Overall Thickness: 5 mils (0.125 mm).
3. Foil Core Thickness: 0.35 mil (0.00889 mm).
4. Weight: 28 lb/1000 sq. ft. (13.7 kg/100 sq. m).
5. 3-Inch (75-mm) Tensile According to ASTM D 882: 70 lbf (311.3 N), and 4600 psi (31.7 MPa).

2.7 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch (6.4-mm) grommets in corners for mounting.
3. Nominal size, 7 by 10 inches (180 by 250 mm).

D. Metal-Backed, Butyrate Warning Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch (1-mm) galvanized-steel backing; and with colors, legend, and size required for application.
2. 1/4-inch (6.4-mm) grommets in corners for mounting.
3. Nominal size, 10 by 14 inches (250 by 360 mm).

E. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."
3. Arc-flash, multiple services and voltages, and others.

2.8 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch (1.6 mm) thick for signs up to 20 sq. inches (129 sq. cm) and 1/8 inch (3.2 mm) thick for larger sizes.

1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm).

C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm). Overlay shall provide a weatherproof and UV-resistant seal for label.

2.9 EQUIPMENT IDENTIFICATION LABELS

A. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm).

B. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm). Overlay shall provide a weatherproof and UV-resistant seal for label.

C. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

D. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

E. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch (25 mm).

2.10 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 12,000 psi (82.7 MPa).
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 12,000 psi (82.7 MPa).
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black.

2.11 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in painting Sections of specifications for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

F. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.

G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.

H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:

1. Outdoors: UV-stabilized nylon.

I. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.

J. Painted Identification: Comply with requirements in painting Sections of specificationsfor surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

A. Accessible Raceways, Armored and Metal-Clad Cables, More Than 600 V: Self-adhesive vinyl labels. Install labels at 10-foot (3-m) maximum intervals.

B. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A, and 120 V to ground: Identify with self-adhesive vinyl label. Install labels at 10-foot (3-m) maximum intervals.

C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded feeder and branch-circuit conductors.

a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
b. Colors for 240/120-V Circuits:

1) Phase A: Black.
2) Phase B: Red.

c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

D. Power-Circuit Conductor Identification, More than 600 V: For conductors in vaults, pull and junction boxes, manholes, and handholes, use nonmetallic plastic tag holder with adhesive-backed phase tags, and a separate tag with the circuit designation.

E. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

F. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.

G. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

H. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Install underground-line warning tape for both direct-buried cables and cables in raceway.

I. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

J. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- (10-mm-) high letters for emergency instructions at equipment used for power transfer and load shedding.

K. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

   a. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
   b. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
   c. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment to Be Labeled:

   a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.

3. Normal Power: Black letters on white

   a. Enclosures and electrical cabinets.
   b. Access doors and panels for concealed electrical items.

END OF SECTION 16075

SECTION 16100 - BASIC MATERIALS AND METHODS

PART 1 – GENERAL

1.1 SCOPE

A. This section outlines the intent of Division 16 with regard to Basic Materials and Methods.

PART 2 – PRODUCTS

2.1 MATERIALS FURNISHED AS SPECIFIED

A. Material proposed to be furnished as specified shall be in strict accordance with the plans and specifications of Division 16. Shop drawings shall be furnished as required by Section 16011. All materials furnished are subject to the approval of the Architect/Engineer and his authority of approval is final.

2.2 MATERIAL SUBSTITUTIONS

A. Material proposed for substitution shall be of the same quality, perform the same functions, conform to such physical dimensions and appearance as are required by the Engineer. All material proposed for substitution is subject to the approval of the Engineer and his authority for approval is final. No material proposed for substitution will be considered unless all submittal data complies with the plans and specifications of Division 16 as to time of submission, number of copies of submittal, and detail requirements.

2.3 SAMPLES

A. Samples of materials shall be furnished where required by plans and/or specifications of Division 16, or as requested by the Engineer on items proposed as substitutes.

PART 3 – EXECUTION

3.1 SAFETY

A. Maximum consideration shall be given to job safety and only such methods as will ensure the safety of all persons shall be employed. The codes and regulations of OSHA shall be given strict compliance as well as such other codes, laws, and regulations as may be applicable.

3.2 TECHNIQUE

A. It is the intent of these plans and specifications to direct attention to the absolute necessity to use safe techniques and to provide quality installations in compliance with good practice and the drawings and specifications of Division 16.

END OF SECTION 16100

SECTION 16110 - RACEWAYS - METAL

PART 1 – GENERAL

1.1 SCOPE

A. This section deals with the materials to be used as metal raceways, connections, and supports.

PART 2 – PRODUCTS

A. Conduit: Rigid and IMC shall be galvanized outside and inside by hot dipping. EMT shall be Electro-Galvanized. Conduit shall be as manufactured by Republic, Wheatland, Triangle, Pittsburgh Standard, Youngstown, or Allied.

B. Sealtight flexible metal conduit shall consist of flexible galvanized steel tubing with a liquidtight jacket of PVC. All flexible conduit shall have a copper bonding conductor wound into conduit body.

C. Couplings and connectors on rigid and IMC shall be standard threaded type, galvanized outside and inside by hot dipping. Clamp type and threadless are not acceptable. Couplings and connectors, for rigid and IMC shall be as manufactured by Raco or Appleton.

D. EMT connectors shall be steel, set screw or compression type, equipped with insulating throats. Steel set screw couplings shall be O-Z/Gedney 4000ST series, T & B 5031 - 5049 series, Midwest Electric series 1450 or equal series of Raco. Compression couplings shall be O-Z/Gedney 7000ST or 7000RST series, T & B 5123 - 5623 series, Midwest Electric series 1650, or equal series of Raco. Cast metal couplings will not be approved for any location.

E. EMT couplings shall be steel, set screw or compression type. Steel set screw connectors shall be O-Z/Gedney 5000S series, T & B 5030 - 5046 series, Midwest Electric series 460 or equal series of Raco. Compression type connectors shall be O-Z/Gedney 6000S or 6000RS series, T & B 5120 - 5620 series, Midwest Electric series 660, or equal series of Raco. Cast metal connectors will not be approved for any location.

F. Connectors raintight: Meyers or approved equal.

G. Bushings on rigid and IMC shall be threaded malleable iron with integral noncombustible insulator. Rigid and IMC bushings shall be O-Z/Gedney "IBC" series, T & B BIM series, Midwest Electric series 1031 - 1043 or equal by Penn Union. Grounding bushings shall be O-Z/Gedney "IBC-L" series, T & B 3870 - 3999 series, Midwest Electric GLL series or equal by Penn Union.

H. Watertight Flex Connectors: O-Z/Gedney, Raco, or Midwest Electric with insulating throat.

I. Conduit clamps and supports shall be as manufactured by T & B, Midwest Electric, or O-Z/Gedney.

J. Conduit fittings shall be manufactured by Pyle-National, Appleton, Crouse-Hinds, or Russellstoll.

PART 3 – EXECUTION

3.1 CONDUIT, TYPE OF INSTALLATION

A. Unless shown or specified otherwise, rigid or IMC conduit shall be used except underground where PVC is indicated on plans.

C. Rigid conduit shall be used in hazardous areas.

D. EMT conduit shall only be used if permitted by Engineer.

3.2 INSTALLATION OF CONDUIT EMT (WHERE PERMITTED), IMC, RIGID, MC CABLE, FLEXIBLE CONDUIT

A. Conduits shall be sized in accordance with the latest National Electrical Code except that conduits containing more than two conductors shall be sized based on 40% fill and minimum conduit size shall be 3/4". There shall not be more than three current caring conductors, one neutral conductor and one equipment ground conductor installed in any one conduit. Conduit shall be sized larger than required above when so shown on the drawings or when required by local Code.

B. Follow methods which are appropriate and approved for the location and conditions involved. Where not otherwise shown, specified, or approved in a particular case, run all wiring concealed.

C. Where rigid and/or IMC conduits enter boxes they shall be secured in place by approved locknuts and bushing.

D. Where EMT enters boxes they shall be secured in place with approved insulating fittings.

E. Conduit ends shall be plugged during construction.

F. The use of running threads is absolutely prohibited. All conduit shall be jointed with approved conduit couplings. All couplings on IMC and rigid conduit shall be threaded.

G. All conduits shall be supported within 3 feet of each coupling, fitting, outlet box, junction box, cabinet or equipment enclosure. Conduits shall not be supported by junction boxes, pull boxes, fixtures, etc.

H. All conduit connections to sheet metal cabinets or enclosures subject to the elements shall terminate by use of raintight hubs.

I. A 100 pound test nylon pull cord shall be installed in each empty conduit.

J. Apply two coats of asphaltum paint to all underground metallic conduit. Carefully retouch any breaks in paint and allow to dry before covering with earth. Leave exposed until after Engineer's inspection. Pittsburgh Standard Rob-Kote may be used in lieu of painting.

K. Color coding with 3/4" wide band of vinyl plastic electrical tape, 3M company "Scotch 35", applied two full turns around conduit, 6" from all conduit terminations into panelboards, cabinets, junction boxes, etc. Conduit color coding shall be as follow:

System	Color
120/240 volts - Normal	Black

END OF SECTION 16110

SECTION 16111 - RACEWAYS – NON-METALLIC

PART 1 – GENERAL

1.1 SCOPE

A. This section deals with the materials to be used as raceway where shown on the plans or specified as non-metallic conduit.

1.2 WHERE USED

A. Non-metallic conduit shall be used for feeders where below grade. Non-metallic conduit shall, however, convert to rigid metal conduit prior to leaving concrete in areas where conduit would be exposed. Conduit adapters shall be used for transitions. All elbows shall be rigid metal conduit.

B. Non-metallic conduit shall be used where indicated on the plans.

C. Non-metallic conduit shall be used in lieu of metal conduit as permitted by the NEC and local codes where conduit is shown run in the floors and underground.

D. Non-metallic conduit shall be used in lieu of metallic conduit in all instances for individual grounding conductors.

PART 2 – PRODUCTS

2.1 COMPOSITION

A. Conduits and fittings shall be constructed of polyvinyl chloride compounds in accordance with the applicable requirements of UL, NEMA and the NEC.

2.2 SCHEDULE 40, RIGID PVC

A. Shall be U.L. listed for use with 90 degrees C. rated conductors and in conformity with Article 347 of the NEC.

2.3 FITTINGS

A. All couplings, adapter, bells, reducers, etc., shall be of the same material and by the same manufacturer as conduit.

2.4 CEMENT

A. Solvent cement shall be as recommended by the manufacturer.

2.5 MANUFACTURER

A. The conduit manufacturer shall have had a minimum of 5 years experience in the manufacture of the products. Non-metallic conduit shall be as manufactured by Carlon, Queen City, Cantex or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All elbows, bends, etc., shall be either factory bends or made with an approved heat bender.

B. All cuts shall be made with an approved saw and ends deburred.

C. All joints shall be made as follows:

Clean the outside of the conduit to depth of the socket, and the inside of socket with an approved cleaner. Apply solvent cement to the interior of the socket and exterior of conduit, making sure to coat all surfaces to be joined. Insert conduit into the socket and rotate 1/4 to 1/2 turn and allow to dry.

D. No P.V.C. conduit shall be run exposed.

E. All P.V.C. conduit installed under ground below the field surface shall be buried 48 inch minimum from finished surface.

3.2 DUCT TYPE

A. Non-metallic conduit shall be Schedule 40 unless specifically noted otherwise.

3.3 CONCRETE ENCASEMENT

A. All non-metallic conduits installed below roads, driveways, parking areas or other areas subject to heavy traffic shall be concrete encased.

B. Non-metallic conduits shall be concrete encased where indicated on plans.

C. Concrete encasement shall be 3 inch minimum around all conduits.

D. Concrete for encasement of duct banks which carry conductors in excess of 600 volts shall be dyed red or covered with a red, non-deteriorating barrier strip, full width and length of the duct bank.

3.4 GROUNDING

A. Where non-metallic conduit is to be installed as permitted in Section 1.2 an insulated ground wire shall be installed. Ground wire shall be "Code" sized as per NEC unless shown larger on the plans. Conduit shall be increased where required to meet Code fill requirements.

END OF SECTION 16111

SECTION 16120 - CONDUCTORS

PART 1 – GENERAL

1.1 SCOPE

A. This section outlines the quality and type of conductors to be used in the various systems, locations and conditions.

PART 2 – PRODUCTS

2.1 WIRE AND CABLE 600 VOLT

A. Conductors shall have current carrying capacities as per NEC, #12 minimum except for controls, and fixture wire.

B. Conductors for general use, sized #10 and smaller, shall be solid copper. Conductors #8 and larger, and any size to motors or vibrating equipment shall be stranded copper.

C. All conductor insulation shall be 600 volt.

D. Insulation for branch circuits in dry locations only, sized #10 and smaller, shall be color coded, nylon jacketed, PVC, type THHN-THW.

E. Insulation for feeders, #8 and larger, and for circuits run in wet locations or below grade shall be cross-linked polyethylene insulation type RHH-RHW/USE.

F. Conductor color codes shall be as set forth below.

2.2 FIXTURE WIRE

A. Fixture wire shall be Type SF-2 except that type THHN or XHHW may be used in the channel of and flex to fluorescent fixtures.

2.3 CONTROL WIRE

A. Control wire shall be #14, 19 strand, type THHN-THWN, rated 90 degrees C full color range.

2.4 MANUFACTURER

A. Wire and cable shall be manufactured by Rome, Cerro, General, American, Essex, Aetna, Colonial, Encore or Southwire.

2.5 WIRE CONNECTIONS

A. Wire connections, #10 and smaller connections shall be made with insulated wire connectors with steel spring connector threads. Wire connectors shall be "Twister" Wire-Nut series as manufactured by Ideal Industries, Inc. or approved equal.

B. On wire larger than #10, shall be made with approved solderless connectors and covered with Scotch#33 electrical tape so that the insulation is equal to conductor insulation.

C. Connection of stranded conductors, #8 and larger, to bus bars in switchboards, panelboards, equipment enclosures, junction boxes, etc. shall be made with individual lugs, size as required by conductor, bolted to bus bar with full size bolts and nuts with lock washers.

2.6 WIRE SUPPORTS

A. Wires shall be supported in riser shaft over ten feet in height. Wires shall be supported every ten feet with the pOZi-grip welding plug type R as manufactured by O-Z/Gedney.

PART 3 – EXECUTION

3.1 INSTALLATION OF WIRE AND CABLE

A. No conductor shall be smaller than #12 except where designated on the drawings or hereinafter specified.

B. Multi-wire lighting branches circuit where indicated shall be provided with dedicated neutral for each cicuit.

C. All joints and splices in wire shall be made with approved solder-less connectors, and covered so that insulation is equal to the conductor insulation.

D. No splices shall be pulled into conduit.

E. Conductors and conduits shall be continuous between outlets.

F. No conductor shall be pulled until conduit is cleaned of all foreign matter.

G. Where installed in panelboards, cabinets, wireways, switches and equipment wire and cable shall be neatly formed and tied.

H. Where conductors are run in parallel, each conductor making up the feeder shall be exactly the same length, the same size, and the same type of conductor with the same insulation. Further, each group of conductors making up a phase or neutral must be bonded at both ends in the same manner.

I. In installing the main service, additional slack conductors shall be provided as required by the electric utility for connection to their equipment.

3.2 OUTLETS AND BRANCH CIRCUITS

A. Outlets shall be connected to branch circuits as indicated on drawings by circuit number adjacent to outlet symbols. No more outlets than are indicated shall be connected to a circuit.

3.3 WIRE AND CABLE COLOR CODING

A. A color coding system as listed below shall be followed throughout the entire network of branch circuits.

Voltage	120/240 (single phase)
Phase	Color
A	Black
B	Blue
Neutral	White
Ground	Green

B. Conductors sized #10 AWG and below shall have permanently colored insulation. Conductors sized #8 AWG and above shall be color coded by either permanently colored insulation or by means of colored tape applied to the conductor within 12" of each termination and in each enclosure, junction box, etc.

C. Control Conductors: Shall be color coded by use of color coded "tracers". No control circuit shall have two identical conductors.

END OF SECTION 16120

SECTION 16130 - OUTLET BOXES, JUNCTION BOXES AND GUTTERS

PART 1 – GENERAL

1.1 SCOPE

A. This section outlines the quality, type and installation of outlet boxes, junction boxes and gutters (wireways) for general and special use.

PART 2 – PRODUCTS

2.1 JUNCTION BOXES

A. Sheet metal junction boxes, through 4-11/16", shall be standard type of hot dipped galvanized steel, with knockouts, Steel City, Raco, Appleton, Bowers or approved equal.

B. Cast metal junction boxes, through 4-11/16", shall be type FS, FD, JB, GS, or SEH as required for application.

C. Junction boxes through 4-11/16" shall be cast aluminum for all below grade exterior use and where shown. All others shall be NEMA 1, Code gauge steel, flush or surface mounted as indicated and shall be Hoffman or approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION OF JUNCTION BOXES

A. Provide junction or pull boxes where shown on the drawings and as required to facilitate installing conductors. Such boxes shall be "Code" sized unless required to be larger by the plans or other sections of these specifications. All junction boxes shall be accessible.

B. Junction boxes shall be securely fastened to the building structure independent of ductwork, plumbing, etc. Junction boxes shall not be supported by EMT conduit fittings.

C. There shall not be more knockouts opened in any box than are actually required.

D. Boxes shall be properly protected during construction and shall be cleaned of all foreign matter before conductors are installed.

E. Boxes to be imbedded in concrete shall be properly leveled and anchored in place before the concrete is poured.

END OF SECTION 16130

SECTION 16140 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.

1.3 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

C. Samples: One for each type of device and wall plate specified, in each color specified.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

1.6 COORDINATION

A. Receptacles for Owner-Furnished Equipment: Match plug configurations.

1. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).
5. Thomas and Bet

2.2 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. Cooper; 5351 (single), 5352 (duplex).
b. Hubbell; HBL5351 (single), CR5352 (duplex).
c. Leviton; 5891 (single), 5352 (duplex).
d. Pass & Seymour; 5381 (single), 5352 (duplex).
e. Thomas and Bet

2.3 GFCI RECEPTACLES

A. General Description: Straight blade, non-fee or feed-through type as shown on drawings. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. Cooper; GF20.
b. Pass & Seymour; 2084.

2.4 DEVICE PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch- (1-mm-) thick, satin-finished stainless steel.
3. Material for Unfinished Spaces: Galvanized steel.
4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

2.5 FINISHES

A. Color: Wiring device catalog numbers in Section Text do not designate device color.

1. Wiring Devices Connected to Normal Power System: Gray unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:

   a. Cut back and pigtail, or replace all damaged conductors.
   b. Straighten conductors that remain and remove corrosion and foreign matter.
   c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
2. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.

3. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
4. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
5. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
6. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
7. Tighten unused terminal screws on the device.
8. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 16 Section "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black for normal power, red for emergency and blue for UPS power-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

END OF SECTION 16140

SECTION 16450 - GROUNDING

PART 1 – GENERAL

1.1 SCOPE

A. This section deals with the grounding of service equipment, transformers, non-current carrying conductive surfaces of equipment, metal buildings, structures, cable tray, and other equipment.

B. All grounded connections shall be installed in accordance with the National Electrical Code and all local codes and requirements. Such codes shall be considered minimum requirements and installation of the grounding system shall insure freedom from dangerous shock voltage exposure and provide a low impedance ground fault path to permit operation of overcurrent and ground fault protection devices.

PART 2 – PRODUCTS

2.1 CONDUCTORS

A. Grounding conductors shall be insulated copper unless specifically shown or specified otherwise.

B. Grounding conductors shall be identified by green insulation or by green tape.

C. All buried grounding system wire shall be bare, solid, soft-drawn, annealed, copper sized #2 AWG minimum, or as shown on drawings.

2.2 GROUND RODS

A. Ground rods shall be 5/8 inch by 10 feet, copperweld unless noted otherwise on the drawings.

2.3 CONNECTIONS

A. The connection of a grounding conductor to ground rods or building steel shall be by means of a cadweld or thermoweld process.

B. Grounding conductor connections to conduit terminations shall be made with approved ground bushings.

PART 3 – EXECUTION

3.1 MAIN SERVICE GROUND

A. The main service shall have the grounded conductor (neutral) grounded to the grounding electrode system at the supply side of the service disconnecting means by a grounding electrode conductor not smaller than that shown in Table 250-66 of the NEC.

B. The grounded conductor (neutral), the grounding electrode conductor, and the equipment grounding conductor connections shall be made inside the service entrance equipment.

C. The equipment grounding conductor shall be connected to the grounded conductor on the supply side of the service disconnecting means in accordance with Table 250-66 of the NEC for the ampere rating of the service equipment. Where in a service entrance switchboard the equipment grounding conductor shall be connected to a bus bar rated not less than 25 percent of the main bus rating.

3.2 GROUNDING ELECTRODE SYSTEM

A. Shall consist of each of the following electrodes bonded together by the grounding electrode conductors:

1. Driven Ground Rods: 3-ground rods, spaced a minimum of 20 feet apart in a triangular pattern, shall be driven to 18" below grade and interconnected.

2. Other grounding electrodes if available shall be connected to the grounding electrode system as described in Section 250-50 of N.E.C.

B. An earth impedance tester shall be utilized to determine the actual resistance to ground. The maximum acceptable resistance to ground is 25 OHMS, if this value or less is not obtained, additional ground rods shall be driven and connected in parallel until an instrument reading of less than 25 OHMS is obtained. All test readings shall be recorded and submitted to the Engineer for review.

3.3 CADWELDING

A. Cadwelding shall be performed in strict accordance with the manufacturer's requirements.

B. All personnel performing cadwelding shall have been trained by factory certified representatives and proof of this training shall be presented to the Engineer at the time of Cadweld inspection.

C. Cadwelding shall not be performed during conditions of high humidity which inhibit the process from proper bonding. Consult the Manufacturer's instructions for acceptable conditions and do not attempt any Cadwelding during such times as these conditions do not exist.

D. Cadweld molds shall be sized and configured for the specific welding application. Molds which have been field modified for application other than their original purpose will not be utilized under any circumstance. Cadweld "one shot" connections shall not be utilized.

E. In no circumstances will worn out or loose Cadweld molds be utilized. Molds which experience "blow out" during the welding process shall be replaced immediately and any welds made which exhibit evidence of incomplete welding shall be cut off and rewelded.

3.4 EQUIPMENT GROUNDING

A. An equipment grounding conductor (sized in accordance with Table 250-122 of the N.E.C. unless shown or specified elsewhere to be larger) shall be installed in the same raceway with all circuit conductors.

B. Equipment grounding conductors shall be bonded at each enclosure. Where an equipment grounding bus, bonded to the equipment enclosure, is provided, all equipment grounding conductors shall be connected thereto. Where an equipment grounding bus is not provided, grounding bushings shall be utilized on enclosure terminations of conduits.

C. Equipment grounding conductors shall be bonded at each enclosure and pole base. All equipment grounding conductors shall be connected to a common bus, bonded to the equipment enclosure or pole base.

D. Metallic raceways shall be electrically continuous and shall serve as second equipment ground path unless otherwise specified in paragraph "A" above.

E. An equipment grounding jumper shall be installed from the receptacle ground terminal to the outlet box.

3.5 POLE BASES

A. Each pole base shall be bonded to the circuit equipment grounding conductor and to a driven ground rod adjacent to the pole base.

END OF SECTION 16450

SECTION 16461 - PANELBOARD – LIGHTING/RECEPTACLE

PART 1 – GENERAL

1.1 SCOPE

A. Furnish and install circuit breaker lighting and/or receptacle panelboards as shown on the drawings and as specified herein. Panelboards shall be dead front type manufactured in accordance with Underwriter's Laboratories, Inc., standard of panelboards and enclosing cabinets and be so labeled.

B. Panelboards shall be factory assembled.

C. Each lighting receptacle panelboards shall be equipped with SPD / TVSS. Panelboards with more than one section shall be equipped with one SPD / TVSS and it shall be installed in last section in the panelboard.

D. Refer to section 16465 of specification for general specification of SPD / TVSS devices for safety standards, suppressor features, and electrical performance.

E. The panelboard SPD / TVSS shall be tested and suitable for ANSI/IEEE C62.41 Cat. C1 (6kV, 3kA) environments.

F. Suppressor shall be included and mounted within the panelboards by the manufacturer of the equipment. See panelboard schedule for panelboard with TVSS.

G. Panelboard shall be service entrance rated.

PART 2 – PRODUCTS

2.1 PANELBOARD BOXES

A. Panelboard boxes shall be fabricated from sheet steel (galvanized or equivalent rust-resistant). The size of the wiring gutters and gauge of steel shall be in accordance with NEMA and U.L. Standards for panelboards unless shown or specified to be larger.

B. Boxes shall not be furnished with pre-punched knockouts except where otherwise noted.

C. Boxes for panelboards with 18 or more single pole circuit breaker spaces shall be 20 inches wide.

2.2 PANELBOARD FRONTS AND TRIMS

A. Fronts shall be designed for surface or flush mounting as shown on the drawings and shall include hinged door, lock and latch.

B. Fronts for flush panels shall overlap the box by a minimum of 3/4 inch all around. Surface fronts shall have the same overall dimensions as the box.

C. Fronts shall be Code gauge steel with interior and exterior surfaces cleaned and finished with gray baked enamel over a rust-inhibiting phosphatized coating.

C. Locks shall be flush, cylinder type, held in place by concealed screws to a captive nuts welded to the inside of the door. All panelboard locks shall be keyed alike.

D. A framed circuit directory with clear plastic cover shall be affixed to the inside of the door.

E. Panelboards shall have no exposed or accessible live parts when the front is installed whether the door is open or closed.

F. Panelboard install exposed to environment shall have NEMA-4X enclosure and shall be UL listed for outdoor installation.

2.3 PANELBOARD BUS ASSEMBLY

A. Bus bars shall be copper.

B. Bussing shall be arranged for distributed phase arrangement so that one, two, and/or three pole breakers may be installed in any location. The removal, replacement or installation of circuit breaker units shall be allowable without disturbing adjacent units and without drilling or tapping.

C. Main lugs shall be compression type, bolt-on spade lugs when service conductors are aluminum. Compression lugs shall be manufactured by Burndy, T&B or Anderson.

D. Neutral bars shall be full sized and equipped with lugs to accommodate all conductors to be connected.

E. Ground bars shall be furnished in all panelboards, equipped with lugs to accommodate all conductors to be connected. Where more than one ground bar is furnished, each shall be interconnected with a conductor sized not less than the panelboard feeder grounding conductor.

2.4 CIRCUIT BREAKER ARRANGEMENT

A. Circuit breakers shall be bolt-on, factory installed.

B. The entire left row shall be filled, then begin top right.

C. Breakers shall be numbered vertically beginning top left. Multi-section panelboards shall be numbered consecutively through all sections.

D. Circuit breaker numbers shall be plastic or metallic, permanently attached to trim. Stick-on paper numbers will not be accepted.

2.5 CIRCUIT BREAKERS

A. Circuit breakers shall be quick-make, quick-break, thermal magnetic, trip indicating, molded case type, alternating current. Breakers shall trip free of the handle and tripping shall be indicated by the handle assuming a position between "OFF" and "ON". Multiple pole breakers shall have internal common trip with single operating handle; external handle ties are not acceptable.

B. Single pole breakers shall be UL listed as "Switching Breakers" and shall carry the "SWD" marking.

C. Breakers shall be bolt-on type.

D. Where noted on the panelboard schedule or on the plans ground fault circuit protection breakers shall be provided:

1. Circuit breakers sized 15 ampere, 20 ampere, and 30 ampere, 1 and 2 pole, shall have integral Class A ground fault protection (5 milliampere sensitivity). This feature shall not require additional panelboard space.

2. Circuit breakers sized 40 amperes and above and all 3 pole units shall utilize external sensors and control circuit breakers via shunt trip units. Sensitivity shall be adjustable from 4 to 12 amperes. Each circuit breaker unit shall be equipped with all necessary wiring, hardware, etc., required for a complete independently functioning unit. Current transformers and controls may be externally mounted to panelboards in NEMA 1 enclosures or if space permits, mounted in panelboard enclosure. Reset controls shall be readily accessible and shall not require the removal of panelboard covers, etc.

E. Main Breakers shall be industrial frame equal to GE "E" frame.

F. Other breaker accessories shall be furnished as shown on the drawings.

2.6 PANELBOARD EQUIPMENT SHORT CIRCUIT RATING

A. Each panelboard, as a complete unit, shall have a short circuit current rating equal to or greater than the full (series rating is not acceptable) equipment rating shown on the panelboard schedule or on the plans. This rating shall be established by testing with the overcurrent devices mounted in the panelboard. Panelboards shall be marked with their maximum short circuit current rating at the supply voltage.

B. Panelboards shall be labeled with a UL short circuit withstand rating.

2.7 SPECIAL REQUIREMENTS

A. Any special requirements on the drawings, such as for increased interrupting rating, ground fault protection, etc., shall supersede these specifications, but only insofar as that particular requirement is concerned.

2.8 SPD / TVSS INSTALLATION

A. Distribution and Branch suppressors shall be installed in the panelboard.

B. The panelboard shall be constructed using a direct bus bar connection (no cable connection between bus bar and SPD / TVSS). Panelboards that use a wire connection do not meet the intent of this specification.

C. All monitoring diagnostics features such as indicator lights, trouble alarms and surge counter (if specified) shall be visible from the front of the panelboard.

2.9 MANUFACTURER

A. Panelboards shall be as manufactured by GE, Square "D", Cutler Hammer, or approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION

A. All panelboard dimensions shall be carefully checked and coordinated with the proper trades to ensure proper mounting space and support.

B. Surface mounted panelboards shall be secured to two (2) vertical runs of 7/8" x 1-5/8" steel strut each 8'- 0" minimum in length and securely anchored to the wall by means of lead anchors or toggle bolts.

C. Wiring in panelboard gutters shall be done in a neat and workmanlike manner. Wiring shall be grouped into neat bundles and secured with NON-METALLIC tie wraps.

D. Panelboard directories shall be typewritten and shall be field verified by the contractor to ensure accuracy. Directories shall include adequate descriptions to allow accurate identification of the load and location served.

END OF SECTION 16461

2.6 PERIPHERAL DEVICES/EQUIPMENT SHORT CIRCUIT PROTECTION

A Each peripheral device shall have a short circuit current rating equal to or greater than the full (series) rating (or percentage) equipment rating shown on the enclosed schematic of the panel. This rating shall be established by testing with the overcurrent devices mounted in the panel board. Peripheral devices shall be marked with their maximum short circuit current rating at the supply voltage.

B Panelboards shall be labeled with a UL short circuit withstand rating.

2.7 SPECIAL PROTECTIVE DEVICES

A Any special protective devices on the drawings (such as for processor interrupting rating, ground fault protection, etc.) shall be supplied fully specification tested only insofar as that protection requirement is concerned.

2.8 SERVICE INSTALLATION

A Distribution and branch panelboards shall be installed in the position shown.

B The panelboard shall be constructed using a direct bus connection (no cable connection between bus bar and SCR / FVNR). Panelboards that use a wire connection do not meet the intent of this specification.

C All monitoring devices/lights (unless such as indicated) shall be visible and on the exterior (if specified) shall be visible from the front of the panel board.

2.9 MANUFACTURER

A Panelboards shall be as manufactured by GE, Square D, Cutler Hammer or approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION

A All panelboard dimensions shall be carefully checked and coordinated with the proper trades to ensure proper mounting space and support.

B Surface mounted panelboards shall be secured to two (2) vertical runs of 1½" x 1½" x ¼" steel strut each 12'-0" minimum in length and securely anchored in the wall by means of lead anchors or toggle bolts.

C Wiring in panelboards (cables shall be cut in a neat and workmanlike manner. Wiring shall be grouped and dressed into its area serviced with NON METALLIC tie wraps.

D Panelboard identification shall be typewritten and shall be field verified by the contractor to ensure accuracy. Directories shall include adequate descriptions to allow accurate identification of the load and location served.

END OF SECTION 16441

SECTION 16465 - SURGE PROTECTION DEVICE/TRANSIENT VOLTAGE SURGE SUPPRESSOR PROTECTION

PART 1 – GENERAL

1.1 SCOPE

A. Furnish and install surge protection device (SPD) / transient voltage surge suppressor (TVSS) protection system indicated on the drawings and schedules.

B. The following specification describes the requirements for a Surge Protection Device (SPD) / Transient Voltage Surge Suppressor (TVSS) protection system.

C. The individual units shall be UL Listed under UL 1449 (3rd Edition), complimentary Listed under UL 1283 and CSA certified (CSA 22.2). The UL 1449 suppression voltage ratings (SVR) and CSA label shall be permanently affixed to the TVSS unit.

1.2 RELATED SPECIFICATIONS

A. Refer to these related sections for additional surge specifications that relate to the following distribution equipment.

1. Lighting and Receptacle Panelboards (section 16461)

1.3 SUBMITTALS

A. Provide verification that the TVSS device complies with the required UL 1449 (IEEE C62.41 Cat. C1 - 6kV, 3kA) Surge Voltage Ratings (SVR).

B. Provide actual Let -Through voltage test data in the form of oscillograph results for ANSI/IEEE C62.41 Cat. C3 (20kV, 10kA), Cat. C1 (6kV, 3kA), and Cat. B3 (6kv, 500A @ 100kHz) tested in accordance with ANSI/IEEE C62.45.

C. Provide spectrum analysis of each unit based on MIL-STD-220A test procedures between 50 kHz and 200 kHz verifying the devices noise attenuation exceeds 45 dB at 100 kHz.

D. Provide test report (s) from a nationally recognized independent testing laboratory verifying that the suppressor(s) can survive the published surge current rating on a per mode and per phase basis. The test wave shall be the ANSI/IEEE C62.41, 8x20 microsecond current wave.

1.4 ELECTRICAL REQUIREMENTS

A. Unit Operating Voltage. Refer to drawings for operating voltage and unit configuration.

B. Maximum Continuous Operating Voltage (MCOV). The MCOV shall be greater than 115% of the nominal system operating voltage.

C. Protection Modes. For a Wye configured system, the device must have directly connected suppression elements between line-neutral (L-N), line-ground (L-G), and neutral-ground (N-G). For a Delta configured system, the device must have suppression elements between line to line (L-L) and line to ground (L-G).

D. UL 1449 SVR. The maximum UL 1449 (IEEE C62.41 Cat. C1 6kV, 3kA) SVR for the device must not exceed the following:

Modes	208Y/120 or 120/240
WYE – L-N; L-G; N-G	400 V
Delta – L-L, L-G	800 V

E. ANSI/IEEE Cat. C3 Let Through Voltage. The let through voltage based on ANSI/IEEE C62.41 and C62.45 recommended procedures for Cat. C3 surges (20 kV, 10kA) shall be less than:

Modes	208Y/120 or 120/240
L-N	500 V

F. ANSI/IEEE Cat. B3 Let Through Voltage. Let Through voltage based on ANSI/IEEE C62.41 and C62.45 recommended procedures for the ANSI/IEEE Cat. B3 Ringwave (6 kV, 500 amps) shall be less than:

Modes	208Y/120 or 120/240
L-N	170 V

G. All units must be tested to the specified surge ratings to ensure the device(s) will achieve the required life expectancy and reliability. Testing to full ratings also verifies internal construction quality of the suppressor(s). Test data must be provided from an independent test lab capable of producing 200kA surge current waveforms using the ANSI/IEEE C62.41 impulse waveform (8x20 microsecond). Withstand testing must be provided on a per mode and per phase basis.

PART 2 – PRODUCTS

2.1 SPD / TVSS DESIGN

A. Balanced Suppression Platform. The surge current shall be equally distributed to all MOV components to ensure equal stressing and maximum performance. The surge suppression platform must provide equal impedance paths to each matched MOV.

B. Electrical Noise Filter. Each unit shall include a high performance EMI/RFI noise rejection filter. Noise attenuation for electric line noise shall be no less than 45 dB at 100 kHz using the MIL-STD-220A insertion loss test method. The unit shall be complimentary listed to UL 1283. Products not able to demonstrate noise attenuation of 45 dB @ 100 kHz as a minimum shall be rejected.

C. Internal Connections. All internal components shall be hardwired with connections utilizing low impedance conductors and compression fittings.

D. Safety and Diagnostic Monitoring. Each unit shall be equipped with standard overcurrent protection:

1. Continuous monitoring of fusing system.
2. Monitor individual MOVs (including neutral to ground). The system must be capable of identifying open circuit failures not monitored by conventional fusing systems.
3. Monitor for overheating in all modes due to thermal runaway.

A green/red solid state indicator light shall be provided on each phase. The absence of a green light and the presence of a red light shall indicate which phase(s) have been damaged. Fault detection will activate a flashing trouble light. Units that can not detect open circuit damage, thermal conditions and over current will not be accepted.

E. Warranty - The manufacturer shall provide a full five (5) year warranty from the date of shipment against any TVSS part failure when installed in compliance with manufacturer's written instructions and any applicable national or local electric code.

2.2 ACCESSORIES

A. The unit must be equipped with transient event counter and audible alarm.

B. Remote Status Monitor: The TVSS device must include Form C dry contacts (one N.O. and one N. C.) for remote annunciation of unit status: The remote alarm shall change state if any of the three monitoring systems described detect a fault condition.]

C. Push-To-Test Feature: Each suppression unit shall incorporate an integral test feature, which verifies the operational integrity of the unit's monitoring system.]

2.3 SPD/TVSS ASSEMBLIES:

A. The following specification describes the requirements for a surge protection device (SPD)/transient voltage surge suppressor (TVSS) system as indicated on the drawings and schedules.

B. Types: The TVSS applications covered under this section include service entrance, high exposure roof top & branch locations.

C. Unit Operating Voltage. Refer to drawings for quantity and surge ratings, operating voltage and unit configuration.

D. Surge Current Capacity. Total surge current (based on an 8x20 microsecond waveform) that the device is capable of surviving shall not be less than:

Application	Min Surge Current Per Phase	Min Surge Current Per Mode *
Service Entrance Panelboard	240 kA	120 kA

* L-G, L-N and N-G (WYE system);
L-L, L-G (Delta system)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Distribution and Branch suppressors shall be installed in the panelboard.

B. The panelboard shall be constructed using a direct bus bar connection (no cable connection between bus bar and SPD / TVSS). Panelboards that use a wire connection do not meet the intent of this specification.

C. All monitoring diagnostics features such as indicator lights, trouble alarms and surge counter (if specified) shall be visible from the front of the panelboard.

END OF SECTION 16465

SECTION 20000 – GEOTECHNICAL REPORT

See attached Geotechnical Report.

3516 Greensboro Avenue
Tuscaloosa, AL 35401
205.345.0816
www.ttlusa.com

June 26, 2014

Walker Associates, Inc.
Attn: Mr. Bradley Porter, P.E.
917 22nd Avenue - Suite B
Tuscaloosa, AL 35401

RE: Soil Survey and Materials Report
Alberta Parkway
Tuscaloosa, Tuscaloosa County, Alabama
TTL Project No. 100114037

Dear Mr. Porter:

The following Soil Survey and Materials Report is documentation of the recommendations of TTL, Inc. (TTL) for construction of the above referenced project. Quantities are based on the project plans provided by Walker Associates, Inc. (Walker). This work was performed in general accordance with the following documents:

1. ALDOT 390;
2. Checklists and Guideline for Review of Geotechnical Reports prepared by the Federal Highway Administration (FHWA);
3. Soils Evaluation Workshop Manual, also prepared by FHWA.

If you have any questions or need additional information, please call us at 205-345-0816.

Sincerely,

TTL, Inc.

Brian E. Wysock (by BEW)

Brian E. Wysock, E.I.
Staff Professional

ALABAMA LICENSED 2014 No. 26775 PROFESSIONAL ENGINEER R. JASON WEBBER

R. Jason Webber, P.E.
Principal Engineer

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REFERENCE

Osborne, W.E., Szabo, M.W., Neathery, T.A., and Copeland, C.W., 1988, Geologic map of Alabama, Geological Survey of Alabama, Special Map 220.

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1.0 PROJECT INFORMATION

Project Description

The project is located in an area of Tuscaloosa, Tuscaloosa County, known as Alberta City and consists of two single-lane roads with street-side parking, separated by a vegetated decorative median, and sidewalks running parallel to the roadway on both sides. An additional walking path and park will be located to the south of the two drives near 25th Avenue East. At the time of this report, grading plans were not yet finalized, but cuts and fills are assumed to be 5 feet or less.

The new alignment will generally run parallel to 7th Street East between 23rd Avenue East and 25th Avenue East and will extend east to 26th Avenue East and west to Kicker Road, for a total length of about 2,800 feet. The project will also include improvements to each intersection along the project alignment. It is our understanding that the existing northern right-of-way of 7th Street East will be maintained and the southern right-of-way will be extended further south. The proposed project area was damaged during the April 27, 2011 tornado event and the majority of the structures have been removed; however, foundation elements including floor slabs remain in places along the alignment. The boring locations are presented on the Boring Location Schematic in Appendix D.

Geologic Setting

Tuscaloosa is situated near the approximate contact of the Cumberland Plateau section of the Appalachian Plateau and the East Gulf Coastal Plain section of the Gulf Coastal Plain physiographic province. The plateau region in this part of Alabama is identified more specifically as the Black Warrior Basin, a structural depression covering a 15-county area in northwest Alabama and north-east Mississippi. Rocks in the basin are Pennsylvanian in age and consist of shales, sandstones, conglomerates, and coal seams. Surface weathering of these strata, assigned to the Pottsville Formation, produces residual soils consisting of clays, silts and sands. Depending on site location, the bedrock and residual soils may be covered by marine sediments of the Gulf Coastal Plain. The marine sediments are typically comprised of clays, silts, sands, or gravels. Because of the relatively complex depositional environment, these sediments can be subject to abrupt changes in composition and consistency both vertically and horizontally.

2.0 SUBSURFACE INVESTIGATION AND CONDITIONS

Procedures

Twenty-three soil test borings were performed by TTL in general accordance with ALDOT Procedure 390 using a CME 550x drill rig. The borings were drilled to a depth of 11 feet below the ground surface (bgs). Note, Boring No. 037-18 encountered a buried utility at a depth of about 4 feet bgs. The boring was offset and re-drilled. The subsurface investigation for this project was conducted between April 24, 2014, and May 22, 2014. Standard penetration resistance testing (SPT) was conducted in general accordance with AASHTO T-206 continuously in the upper 6 feet bgs and then at 5-foot intervals in each soil test boring using an automatic hammer. Field logs were prepared by TTL's staff professional engineer present during drilling operations indicating the soil conditions encountered. Eleven asphalt cores were obtained within the existing roadways to estimate the existing buildup. The boring and core locations were recorded utilizing hand-held, sub-meter GPS equipment.

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Soil samples were subjected to testing which included moisture content, Atterberg Limits, and sieve analysis, in TTL's Tuscaloosa laboratory and a summary of the results is included in Appendix B.

Soil

Generally, the borings encountered fine and coarse grained soil strata of varying thickness. Fine grained soils generally included lean clay, lean clay with sand, and sandy lean clay. These soils were classified as A-4 or A-6 by the AASHTO soil classification system and ranged in consistency from very soft to hard. Coarse grained soils generally included clayey sand, clayey sand with gravel, and poorly-graded sand. These soils were classified by the AASHTO soil classification system as A-2 or A-3. The coarse grained soils ranged in consistency from very loose to dense.

Rock

Rock was not encountered in our borings and is not anticipated to be encountered during the grading operations for this project.

Subsurface Water

The borings were dry-augered to their termination depths in an attempt to observe for the presence of subsurface water. Subsurface water was not encountered in the borings at the time of our drilling operations. The boreholes were backfilled with the auger cuttings prior to demobilization from the site.

The absence of free water should not necessarily be construed that the subsurface water level is deeper than the boring depths. The short-term field observations simply do not permit an accurate evaluation of the subsurface water level. Subsurface water levels are influenced by seasonal and climatic conditions. Perched water may be encountered during periods of inclement weather. The foundation contractor should check the subsurface water conditions just prior to foundation excavation activities. Specific information concerning subsurface water is noted on each boring log presented in Appendix E of this report.

Topsoil

The borings performed in grassed areas encountered topsoil ranging from 3 to 12 inches in thickness. The topsoil was generally less than 6 inches in thickness.

3.0 SITE PREPARATION CONSIDERATIONS

The borings for this project were performed in areas accessible to our drilling equipment at approximate intervals of 300 feet along the project centerline. The spacing of the borings was adjusted in some areas of the project which included access drives and parking areas in order to attempt to observe the material present over the greatest area. Our experience with projects near and adjacent to this proposed roadway has indicated surficial soft soils are likely to be present.

Initially, we recommend the site be stripped of all vegetation, topsoil and any other unsuitable materials. Our observations of the site indicated several structures were demolished during the April 27, 2011, tornado event; however, the foundations and floor slabs of many of these structures are still present and will require removal prior to roadway construction. Stripping operations should

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extend at least 5 feet beyond the limits of the proposed construction area where possible. Topsoil can be stockpiled on-site for later use, but any debris or otherwise unsuitable material should be hauled from the site to prevent its incorporation into structural fill.

The stability of the existing subgrade soil exposed after stripping or initial cutting should be assessed by proofrolling. The proofrolling should be performed by having a loaded dump truck slowly progress across the site in a series of overlapping passes. Areas that rut or pump under the proofrolling load should be treated as recommended by TTL personnel present during the proofrolling process. Areas of low consistency soils are described below along with recommendations for remediation of those soils. Based on our experience in the general area of this project, we anticipate areas of soft soils may be revealed during proofrolling which were not indicated by our borings. Therefore, we recommend a conservative undercut quantity be set up in the project plans for areas of soft soils encountered after stripping and during proofrolling. The undercut recommendations provided below are based on minimal cut and fill (less than 5 feet) for the project. If significant cut or fill is anticipated, these recommendations may need to be reevaluated by TTL during construction of the roadway.

Boring No. 037-01 encountered very soft lean clay with an SPT "N" value of 0 blows per foot approximately between 4.5 and 7 feet bgs. Based on the depth of the soft material and the proximity of existing underground utilities, it is our opinion the low consistency of the material could be due to poor utility backfill. The overlying materials have SPT "N" values of between 8 and 25, and limited fill is anticipated in this area; therefore, it is not anticipated these soils will experience significant post construction settlement.

Boring No. 037-02 encountered lean clay with SPT "N" values between 4 and 6 blows per foot approximately between 3 and 7 feet bgs. The overlying material with SPT "N" values of 12 and 7 blows per foot is anticipated to provide adequate cover; however, if cut is anticipated, this area could require undercutting as determined by proofrolling during construction.

Boring No. 037-11 encountered low consistency material including clayey sand, lean clay with sand, and lean clay with an SPT "N" value of 6 within the upper 1.5 feet bgs and between 3 and 4.5 feet bgs. Project plans provided to TTL indicate 23rd Avenue East will include new water and sanitary sewer lines to be constructed within the roadway. Therefore, any surficial soils in the area of new utility construction are anticipated to be remediated during utility backfill (outlined in the Structural Fill section of this report). However, areas outside of utility construction will likely be densified during construction and the remaining low consistency material likely would not result in significant post construction settlement.

Underlying the asphalt and base layer, Boring No. 037-15 encountered firm to very soft lean clay with sand with an SPT "N" value between 1 and 6 within the upper 4.5 feet bgs. Project plans indicate 24th Avenue East will include new water and sanitary sewer line construction within the roadway. The soft soils in this area are anticipated to require undercutting approaching 3 feet below subgrade elevation to provide adequate support for the roadway. Areas of new utility construction are anticipated to have soft soils remediated during utility construction and backfill as outlined in this report.

At the intersection of the Alberta Parkway and 25th Avenue East, Boring No. 037-17 encountered loose clayey sand with an SPT "N" value of 6 between 3 and 4.5 feet bgs overlying soft lean clay with sand with an SPT "N" value of 3 blows per foot from approximately 4.5 to 7 feet bgs. Boring No. 037-18a encountered firm sandy lean clay with an SPT "N" value of 5 and 6 approximately between 1.5 and 4.5 feet bgs. It is anticipated the low consistency material is due to poor utility backfill. Based on the project plans to construct new water and sanitary sewer lines, we recommend the soft

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soils encountered in this area be remediated during construction of the new utilities as directed in the Structural Fill section of this report.

Boring No. 037-19 encountered firm to soft sandy lean clay with SPT "N" values between 3 and 6 blows per foot within the upper 4.5 feet bgs. Undercutting of these soils should be expected outside of areas of new utility construction to provide a minimum 3 feet of competent material to provide support for the roadway.

At the intersection of the proposed Alberta Parkway and 26th Avenue East, Boring No. 037-20 encountered lean clay and lean clay with sand with an SPT "N" value of between 0 and 4 blows per foot between approximately 3 and 7 feet bgs. Boring No. 037-22 encountered sandy lean clay within the upper 1.5 feet bgs with an SPT "N" value of 6 blows per foot underlain by soft lean clay with an SPT "N" value of 2 blows per foot between about 3 and 4.5 feet bgs. This intersection will include the construction of new water and sanitary sewer lines based on project plans provided to TTL. It is anticipated that soft soils encountered during utility construction will be remediated during construction and backfilling of the utilities. For areas outside of new utility construction, undercutting should be anticipated as necessary to provide 3 feet of competent material below the subgrade elevation of the roadway.

Based on the assumption of less than 5 feet of cut or fill, soft soils encountered along the project alignment which will likely require removal prior to new fill placement or roadway construction are presented in Table 1. The quantity of undercut in Table 1 does not include soft soil removed for new utility construction. The depths of unsuitable material are estimated and additional undercutting may be required at the discretion of the Project Engineer. As stated earlier, the limited number of borings performed for this project and our experience in the area indicate that additional soft soils will likely be identified during proofrolling which were not identified in our borings. Therefore, we recommend an additional quantity of undercut of 2600 cubic yards (total undercut quantity of 5500 cubic yards) be included in the bid quantities for soft soils encountered during construction.

Table 1. Unsuitable Material

Location	Average Width	Maximum Depth (ft)	Average Depth (ft)	Estimated Quantity (cy)
Alberta Parkway from 200 feet west and 150 feet east of 24th Avenue East	Through lanes and parking areas	3	3	850
Alberta Parkway between 25th Avenue East and 26th Avenue East	Through lanes and turn lanes	3	3	1400
26th Avenue	Full width	3	3	650
			Total:	2900

The top 6 to 8 inches of the in-place subgrade in structural areas should be scarified and compacted to at least 98 percent of the Standard Proctor maximum dry density prior to any fill placement or other construction. Undercut soil should be replaced with structural fill as outlined below in this report. Some of the undercut soil may be suitable for reuse as structural fill based on soil classification, but moisture-conditioning will be required prior to attempting compaction efforts. Material containing organics or debris will need to be removed from the construction site to prevent its incorporation into structural fill.

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It will be important for the contractor to maintain the construction site in a positively drained condition both during and after construction. Water should not be allowed to pond on the site. Ponding water can lead to deterioration of the subgrade surface necessitating over-excavation of the softened soil and/or settlement of completed pavement. Project specifications should clearly detail the contractor's responsibility to notify the designers and the geotechnical engineer if conditions are encountered in the field that would require remedial treatment or which could affect the integrity of the site or the proposed roadway.

Structural Fill

Soil identified to be used as fill should consist of clayey sands, clayey gravels or sandy clays classified as SC, GC or CL, based on the Unified Soil Classification System (USCS), having a plasticity index between 8 and 25. The soil should contain less than 3 percent organics by weight and should be free of large roots and debris.

If site preparation operations are not continuous from start to finish or a long period of inclement weather interrupts site preparation after the site has been proofrolled, the surface receiving fill should be scarified to a depth of 6 inches and recompacted as directed below before placement of the fill is started. Fill material should be placed in horizontal lifts not exceeding 8 inches in loose measure and compacted to the recommended density. No material should be placed on surfaces that are muddy, frozen, or that contain frost.

Compaction may be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers or other equipment suited to the soil being compacted. Materials should be moistened or aerated, as necessary, to provide a moisture content that will facilitate obtaining the recommended compaction. Water content should be maintained between ±3 percent of optimum and the fill material compacted to at least 98 percent of the soil's maximum dry density, as determined by ASTM D 698.

Typically, the bedding and initial backfill around buried utilities are designed to support and protect the piping. The material above this initial backfill (which we call secondary backfill) also helps protect the piping and to support the overlying pavement. Inadequate compaction of this material can lead to excessive settlement of the backfill and premature distress. Therefore, we recommend the following:

- Whenever possible, trench and install utilities prior to other work (such as, before base placement in roadways).
- Place, moisture-condition and compact the secondary backfill in accordance with the applicable project requirements.

In deeper excavations (greater than 5 feet), the use of flowable fill should be considered as backfill. When properly designed, this material can be excavated easily at a later date if required. While the material costs may be higher than other backfill soils, the use of flowable fill is usually quicker, requires no compaction and no testing when used for this purpose. General criteria for flowable fill can be found in ACI 229 R.

Backfilling of utility ditches should meet the minimum compaction recommendations outlined in this report. Utility trenches and temporary excavations should be inclined in accordance with OSHA safety standards. Regardless, it is the responsibility of the contractor to provide a safe excavation, and we assume no responsibility for jobsite safety.

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4.0 PAVEMENT

Pavement Cores

TTL retrieved a total of 11 pavement cores along the proposed Alberta Parkway alignment. Two cores were taken within the existing 7th Street East, two cores were taken in existing intersections, and seven cores were taken within existing streets which will intersect the new alignment. The pavement core locations are shown on the Boring Location Schematic in Appendix D. Photographic logs of these asphalt cores are included in Appendix C. Table 2 summarizes the results of the pavement cores.

Table 2. Pavement Cores

Core Number	Existing Roadway	Asphalt Thickness (in)	Base Thickness (in)	Base Type
CR-01	Kicker Road	5	9	Soil Aggregate
CR-02	Kicker Road	4.5	11.5	Soil Aggregate
CR-03	7th Street East and 23rd Avenue East Intersection	5.5	7.5	Soil Aggregate
CR-04	7th Street East	4	6	Soil Aggregate
CR-05	7th Avenue East and 24th Avenue East Intersection	5.5	8	Soil Aggregate
CR-06	7th Street East	3	10	Soil Aggregate
CR-07	25th Avenue East	6	11	Soil Aggregate
CR-08	25th Avenue East	5.5	28.5	Crushed Aggregate (Suspected Utility Backfill)
CR-09	26th Avenue East	5	Not Recorded	Soil Aggregate
CR-10	26th Avenue East	4	6.5	Soil Aggregate
CR-11	26th Avenue East	4.5	8.5	Soil Aggregate

Pavement Buildups

Project plans provided to TTL indicate the majority of Alberta Parkway will be new construction and will not utilize the in-place pavement along 7th Street East. Additionally, TTL understands the project will include new sanitary sewer and water lines at each intersection along the project alignment except at Kicker Road and 21st Avenue East. At the intersections which will include utility construction, the plans include removing all existing pavement and constructing the mainline buildup over the entire intersection. The intersection with 21st Avenue will involve a relocation of the existing intersection and therefore will be constructed with the mainline buildup as well. The intersection with Kicker Road will include the widening of Kicker Road to accommodate a new right turn lane, left

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turn lane, and through lane along Kicker Road. The widened portion of the roadway should be constructed without the wearing surface to the existing pavement elevation prior to placing tack coat and the wearing surface across all traffic lanes. The overlay should taper over a distance of at least 25 feet. The taper may be accomplished by milling of the existing pavement of Kicker Road.

As shown in the buildups presented below, TTL recommends a 6 inch roadbed stabilizing material layer of ALDOT #57 stone. Typically, this layer is constructed by placing 2 to 3 inches of loose stone over the prepared subgrade soil. The stone is then mixed into the upper 3 to 4 inches of subgrade soil by a roadbed processor. Mixing by disc, motor grader, etc. will not produce the desired mixing and result in a base material with poor structural capacity. This method of base construction utilizing a roadbed processor minimizes reflective cracking of utility cuts in the completed pavement section and provides a uniform base for pavement construction.

Traffic information was not available at the time of this report. However, we anticipate the new alignment will be subjected to bus traffic and some light truck traffic. Therefore, the buildup of the new pavement is designed based on the City of Tuscaloosa's requirement of a structural number of 3.12 for arterial roadways. Two pavement buildups are presented which are equivalent in structural number, but include differing material layers to present different budget options. The first buildup (Table 3) presented utilizes a crushed aggregate base course and a thinner asphalt section. The second buildup (Table 4) utilizes a thicker asphalt section without the additional crushed aggregate base course. The structural design for flexible pavement on this project was designed using criteria established by the "1993 Guide for Design of Pavement Structures." A layer coefficient of 0.54 per inch of thickness for bituminous plant mix wearing and binder layers was utilized based on ALDOT Guidelines for Operation 6-10 Rev. 10/13.

Table 3. Alberta Parkway Buildup with Aggregate Base

Layer	Material Description	Struct. Coef.	Thickness (in)	Actual SN (in)
1	424A-340 Bituminous Concrete Wearing Surface Layer, ½" Maximum Aggregate Size, ESAL Range A/B, 165 lb/sy	0.54	1.50	0.81
2	405A-000 Tack Coat	—	—	—
3	424B-636 Bituminous Concrete Upper Binder Layer, 1" Maximum Aggregate Size, ESAL Range A/B, 250 lb/sy	0.54	2.25	1.21
4	401A-000 Bituminous Treatment A	—	—	—
5	301A-012 Crushed Aggregate Base Course, Type "B", Plant Mixed, 6" Compacted Thickness	0.14	6	0.84
6	231B-004 Roadbed Stabilizing Material, ALDOT #57	0.05	6	0.30
		Total:	15.75	3.16

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Table 4. Alberta Parkway Buildup without Aggregate Base

Layer	Material Description	Struct. Coef.	Thickness (in)	Actual SN (in)
1	424A-340 Bituminous Concrete Wearing Surface Layer, ½" Maximum Aggregate Size, ESAL Range A/B, 165 lb/sy	0.54	1.50	0.81
2	405A-000 Tack Coat	—	—	—
3	424B-635 Bituminous Concrete Upper Binder Layer, ¾" Maximum Aggregate Size, ESAL Range A/B, 165 lb/sy	0.54	1.50	0.81
4	405A-000 Tack Coat	—	—	—
5	424B-666 Bituminous Concrete Upper Binder Layer, 1" Maximum Aggregate Size, ESAL Range A/B, 250 lb/sy	0.54	2.25	1.21
6	401A-000 Bituminous Treatment A	—	—	—
7	231B-004 Roadbed Stabilizing Material, ALDOT #57	0.05	6	0.30
		Total:	11.25	3.13

For areas of the existing pavement that will require overlays, the wearing layer should be used as the overlay. The new roadway should be constructed on subgrade soils with an MR value of at least 6,600 psi or a CBR value of at least 10.

Joint Sealant for HMA Pavement will be required for the wearing surface layer consisting of Section 424 (Superpave) mixes. A quantity should be set up by the design engineer to be used for sealing longitudinal joints. We recommend the following Pay Item No.

Pay Item No. 407B-000 Joint Sealant for Hot Mix Asphalt Pavement – per mile.

5.0 QUALIFICATION OF RECOMMENDATIONS

The recommendations provided are based in part on project information provided to TTL and they only apply to the specific project and site discussed in this report. If the Project Information section in this report contains incorrect information or if additional information is available, you should convey the correct or additional information to TTL and retain us to review the recommendations of this report as an additional service. We can then modify our recommendations if they are inappropriate for the proposed project.

Regardless of the thoroughness of a geotechnical exploration, there is always a possibility that conditions between borings will be different from those specific boring locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and

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document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. We recommend that the owner retain TTL to provide this service based upon our familiarity with the project, the subsurface conditions, and the intent of the recommendations and design.

We have prepared this report exclusively for the use of Walker Associates, Inc. in accordance with generally accepted soil and foundation engineering practices. All information (written or electronic) from TTL concerning TTL's work is for the sole use and reliance of TTL's Client. TTL intends no other third party beneficiaries (express or implied) and copies of such information received by any third parties are NOT for reliance unless TTL first receives a signed Secondary Client Agreement from the third party.

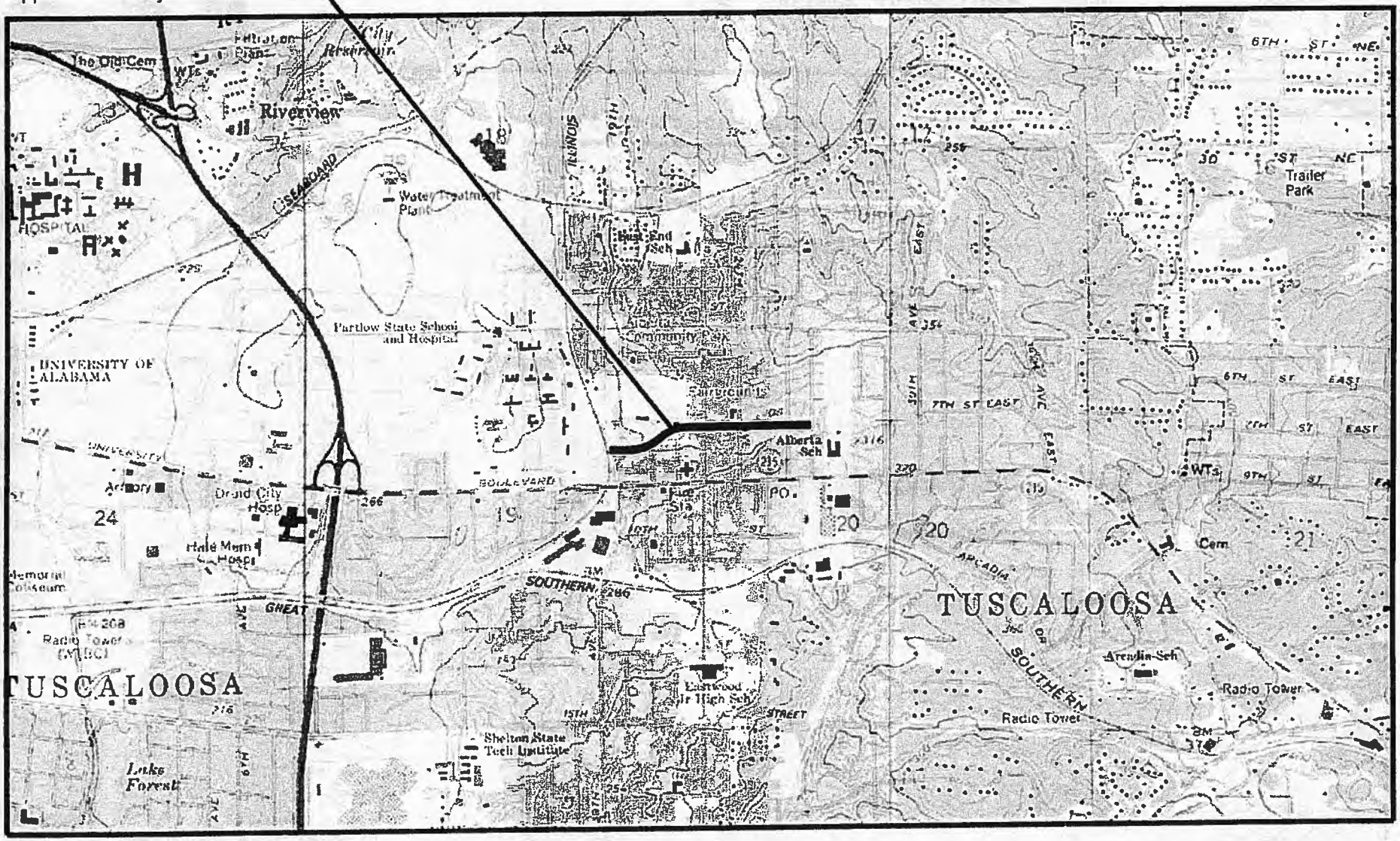
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APPENDIX A

Topographic Location Map

Highway Location Map

Geologic Location Map



Source: USGS Tuscaloosa, Ala. 7.5 Minute Quadrangle Map, 1971 (Photorevised 1983)
USGS Cottondale, Ala. 7.5 Minute Quadrangle Map, 1969 (Photorevised 1983)

0' 2000'

TTL
3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0992

Walker Associates, Inc.

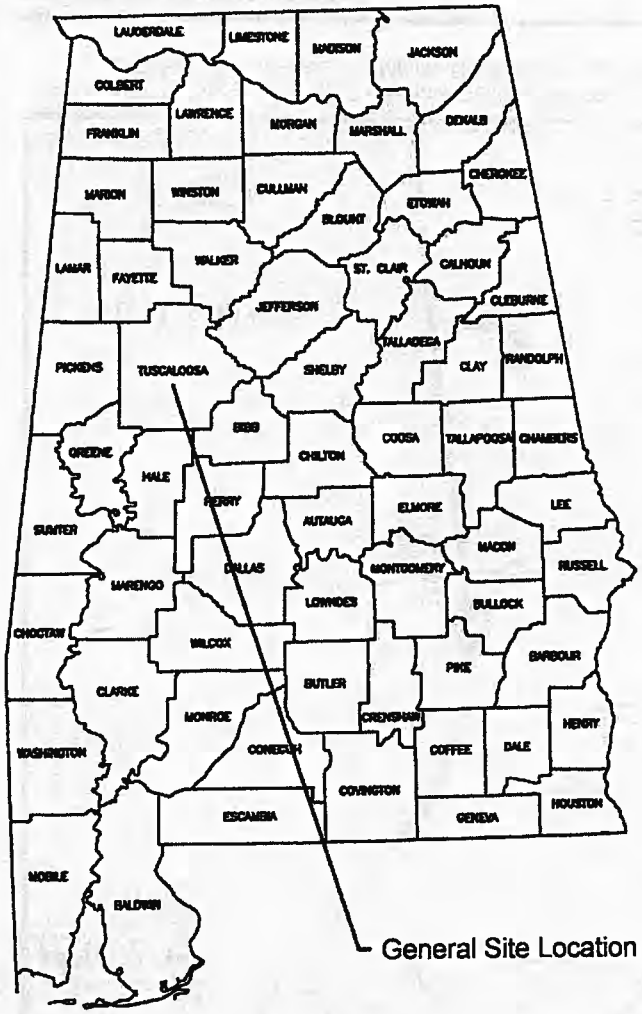
Alberta Parkway

Tuscaloosa, Tuscaloosa County, Alabama

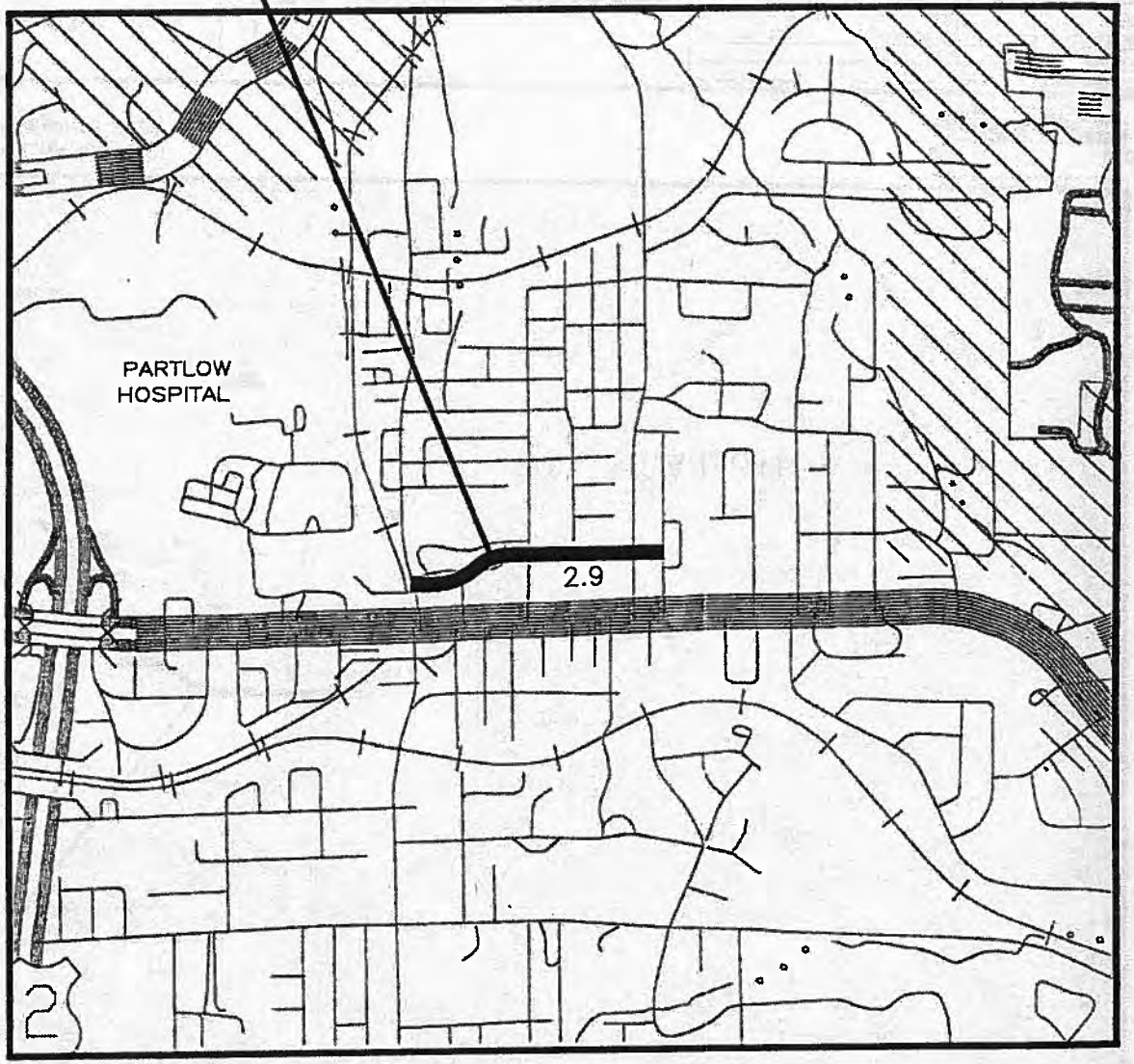
Topographic Location Map

APPROXIMATE SCALE: 1" = 2000'

DRAWING PATH: I:\Projects\2014\100114037 Alberta Parkway\Drawings\14-037 Map1 Topo.dwg		TTL PROJECT NO.: 100114037
DATE CREATED: 06/26/2014	DATE REVISED: N/A	REVISION NUMBER: N/A
DRAWN BY: mjc	CHECKED BY: RJW	
APPROVED: R. Jason Weber, P.E.		
SHEET: MAP-01 OF 3		



Approximate Project Centerline



Source: General Highway Map of Tuscaloosa County, ALDOT, 1999

0' 2000'

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205.345.0816 ■ Fax 205.345.0992

Walker Associates, Inc.

Alberta Parkway

Tuscaloosa, Tuscaloosa County, Alabama

Highway Location Map

SCALE: 1" = 2000'

DRAWING PATH: T:\Projects\2014\100114037 Alberta Parkway\Drawings\14-037 Map2 Hwy.dwg		TTL PROJECT NO.: 100114037
DATE CREATED: 08/26/2014	DATE REVISED: N/A	REVISION NUMBER: N/A
DRAWN BY: mjc	CHECKED BY: RJW	
APPROVED: R. Jason Weber, P.E.		
SHEET: MAP-02 OF 3		

Legend

Qalt	Alluvial, and low terrace deposits
Qt	High terrace deposits
Kck	Coker Formation



Source: Geologic Map of Alabama, Geological Survey of Alabama, 1988

0′ 2000′

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205.345.0816 ■ Fax 205.345 0992

Walker Associates, Inc.

Alberta Parkway

Tuscaloosa, Tuscaloosa County, Alabama

Geologic Location Map

APPROXIMATE SCALE: 1" = 2000'

DRAWING PATH: [illegible]		TTL PROJECT NO.: 100114037
DATE CREATED: 06/26/2014	DATE REVISED: N/A	REVISION NUMBER: N/A
DRAWN BY: mjc	CHECKED BY: RJW	
APPROVED: R. Jason Weber, P.E.		
SHEET: MAP-03 OF 3		

APPENDIX B

Laboratory Classification Summary

BMT-5's

Station & Offset	Location	TTL Boring No.	Depth (ft)	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Gravel	% Sand	% Pass 200 % Silt % Clay (if hydrometer data available)	D50 (mm)	USCS	AASHTO Classification
NA		037-04	0 - 1.5	12	23	14	9	0.5	41.3	58.2		CL	A-4 (2)
NA		037-15	1.5 - 3	24	36	14	22	0.7	23.7	75.6		CL	A-6 (15)
NA		037-19	1.5 - 3	16	24	15	9	0.4	40.0	59.6		CL	A-4 (3)
NA		037-22	3 - 4.5	19	32	13	19	5.3	41.1	53.6		CL	A-6 (7)

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Soil Classification Summary

Client: Walker Associates, Inc.
Project: Alberta Parkway
Location: Tuscaloosa County
TTL Project Number: 100114037

SOILS AND BASE COURSE ANALYSIS

BMT-5

Project No.: 100114037
Location: Tuscaloosa County
Date: 06/26/14

Report of Analysis on Sample: Unclassified Excavation
Specifications of Section No.:
Source of Material: 037-04
Producer:
Sampled By: TTL, Inc.
Submitted By: TTL, Inc.

Laboratory No.: TTL, Inc.
Station: NA
Location: 0 - 1.5 ft of 11 ft boring

Date Sampled: 05/22/14
Date Received:
Date Tested: 05/30/14

TOTAL PASSING %

1-1/2"	Sieve (38.1 mm)	
1"	Sieve (25 mm)	
3/4"	Sieve (19 mm)	
1/2"	Sieve (12.5 mm)	
3/8"	Sieve (9.5 mm)	100.0
#4	Sieve (4.75 mm)	99.5
#8	Sieve (2.36 mm)	99.3
#10	Sieve (2.00 mm)	99.2
#16	Sieve (1.18 mm)	99.1
#40	Sieve (0.425 mm)	95.5
#50	Sieve (0.300 mm)	91.0
#200	Sieve (0.075 mm)	58.2

MATERIAL PASSING #10

Clay	
Silt	
Total Sand	41.3
Mat'l Pass #40 (0.425 mm)	95.5
Mat'l Pass #200 (0.075 mm)	58.2

ATTERBERG LIMITS

Liquid Limit	23
Plastic Limit	14
Plasticity Index	9

GROUP: A-4 (2)

REMARKS:

ADDITIONAL INFORMATION:

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Mitch Clarke
INSPECTOR

T:\PROJECTS\2014\100114037 ALBERTA PARKWAY\114-037 LOGS.GPJ 06/26/14 Report BMT-5 (NON-ALDOT)

SOILS AND BASE COURSE ANALYSIS

BMT-5

Project No.: 100114037
Location: Tuscaloosa County
Date: 06/26/14

Report of Analysis on Sample: Unclassified Excavation
Specifications of Section No.:
Source of Material: 037-15
Producer:
Sampled By: TTL, Inc.
Submitted By: TTL, Inc.

Laboratory No.: TTL, Inc.
Station: NA
Location: 1.5 - 3 ft of 11 ft boring

Date Sampled: 04/24/14
Date Received:
Date Tested: 04/30/14

TOTAL PASSING %

1-1/2"	Sieve (38.1 mm)	
1"	Sieve (25 mm)	
3/4"	Sieve (19 mm)	
1/2"	Sieve (12.5 mm)	100.0
3/8"	Sieve (9.5 mm)	99.4
#4	Sieve (4.75 mm)	99.3
#8	Sieve (2.36 mm)	98.9
#10	Sieve (2.00 mm)	98.8
#16	Sieve (1.18 mm)	98.3
#40	Sieve (0.425 mm)	95.9
#50	Sieve (0.300 mm)	93.7
#200	Sieve (0.075 mm)	75.6

MATERIAL PASSING #10

Clay	
Silt	
Total Sand	23.7
Mat'l Pass #40 (0.425 mm)	95.9
Mat'l Pass #200 (0.075 mm)	75.6

ATTERBERG LIMITS

Liquid Limit	36
Plastic Limit	14
Plasticity Index	22

GROUP: A-6 (15)

REMARKS:

ADDITIONAL INFORMATION:

TTL
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Mitch Clarke
INSPECTOR

T:\PROJECTS\2014\100114037 ALBERTA PARKWAY\14-037 LOGS.GPJ 06/26/14 Report BMT-5 (NON-ALDOT)

SOILS AND BASE COURSE ANALYSIS

BMT-5

Project No.: 100114037
Location: Tuscaloosa County
Date: 06/26/14

Report of Analysis on Sample: Unclassified Excavation
Specifications of Section No.:
Source of Material: 037-19
Producer:
Sampled By: TTL, Inc.
Submitted By: TTL, Inc.

Laboratory No.: TTL, Inc.
Station: NA
Location: 1.5 - 3 ft of 11 ft boring

Date Sampled: 05/22/14
Date Received:
Date Tested: 05/30/14

TOTAL PASSING %

1-1/2"	Sieve (38.1 mm)	
1"	Sieve (25 mm)	
3/4"	Sieve (19 mm)	
1/2"	Sieve (12.5 mm)	
3/8"	Sieve (9.5 mm)	100.0
#4	Sieve (4.75 mm)	99.6
#8	Sieve (2.36 mm)	99.4
#10	Sieve (2.00 mm)	99.3
#16	Sieve (1.18 mm)	99.2
#40	Sieve (0.425 mm)	95.7
#50	Sieve (0.300 mm)	90.2
#200	Sieve (0.075 mm)	59.6

MATERIAL PASSING #10

Clay	
Silt	
Total Sand	40.0
Mat'l Pass #40 (0.425 mm)	95.7
Mat'l Pass #200 (0.075 mm)	59.6

ATTERBERG LIMITS

Liquid Limit	24
Plastic Limit	15
Plasticity Index	9

GROUP: A-4 (3)

REMARKS:

ADDITIONAL INFORMATION:

TTL

. geotechnical • analytical • materials • environmental

Mitch Clarke

INSPECTOR

T:\PROJECTS\2014\100114\037 ALBERTA PARKWAY\114-037 LOGS.GPJ 06/26/14 Report BMT-5 (NON-ALDOT)

SOILS AND BASE COURSE ANALYSIS

BMT-5

Project No.: 100114037
Location: Tuscaloosa County
Date: 06/26/14

Report of Analysis on Sample: Unclassified Excavation
Specifications of Section No.:
Source of Material: 037-22
Producer:
Sampled By: TTL, Inc.
Submitted By: TTL, Inc.

Laboratory No.: TTL, Inc.
Station: NA
Location: 3 - 4.5 ft of 11 ft boring

Date Sampled: 04/24/14
Date Received:
Date Tested: 04/30/14

TOTAL PASSING %

1-1/2"	Sieve (38.1 mm)	
1"	Sieve (25 mm)	
3/4"	Sieve (19 mm)	
1/2"	Sieve (12.5 mm)	100.0
3/8"	Sieve (9.5 mm)	98.5
#4	Sieve (4.75 mm)	94.7
#8	Sieve (2.36 mm)	93.3
#10	Sieve (2.00 mm)	93.1
#16	Sieve (1.18 mm)	92.4
#40	Sieve (0.425 mm)	87.9
#50	Sieve (0.300 mm)	81.2
#200	Sieve (0.075 mm)	53.6

MATERIAL PASSING #10

Clay	
Silt	
Total Sand	41.1
Mat'l Pass #40 (0.425 mm)	87.9
Mat'l Pass #200 (0.075 mm)	53.6

ATTERBERG LIMITS

Liquid Limit	32
Plastic Limit	13
Plasticity Index	19

GROUP: A-6 (7)

REMARKS:

ADDITIONAL INFORMATION:

TTL
geotechnical • analytical • materials • environmental

Mitch Clarke
INSPECTOR

T:\PROJECTS\2014\100114037 ALBERTA PARKWAY114-037 LOGS.GPJ 06/26/14 Report BMT-5 (NON-ALDOT)

APPENDIX C

Pavement Core Photographic Logs

Pavement Core Photographic Log

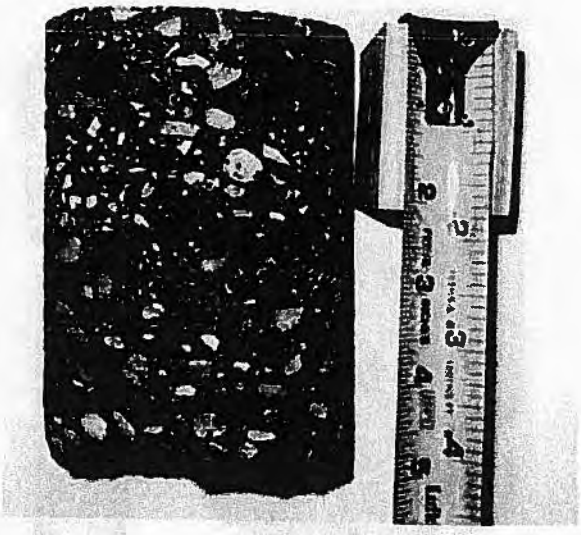
Alberta Parkway

Walker Associates, Inc.

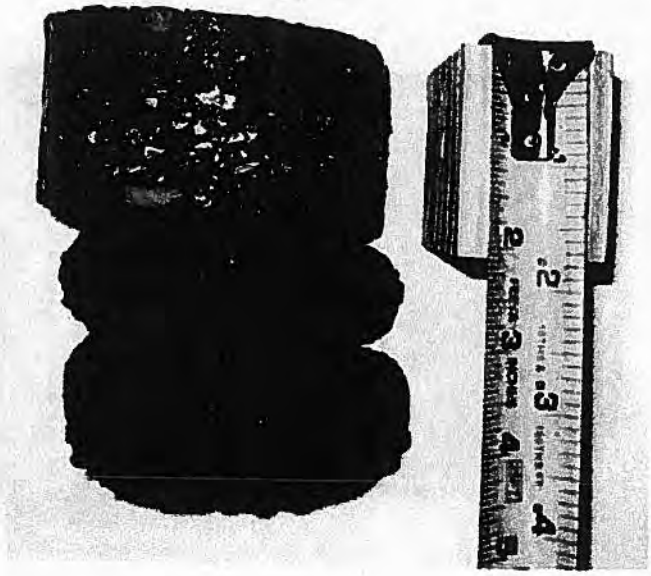
Soil Survey and Materials Report

TTL Project No. 100114037

CR-01



CR-02



Pavement Core Photographic Log

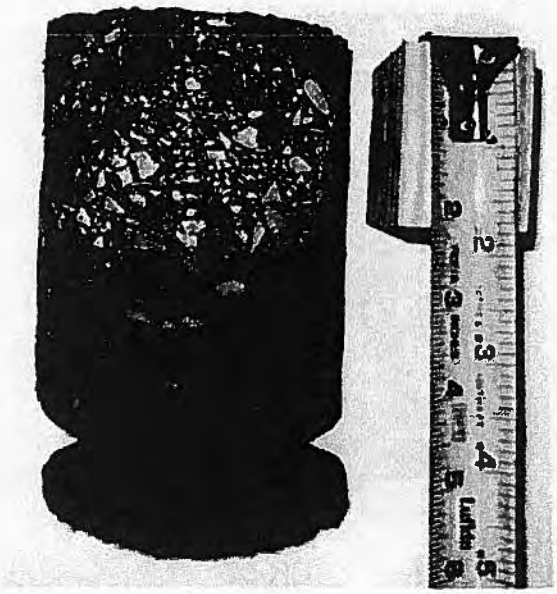
Alberta Parkway

Walker Associates, Inc.

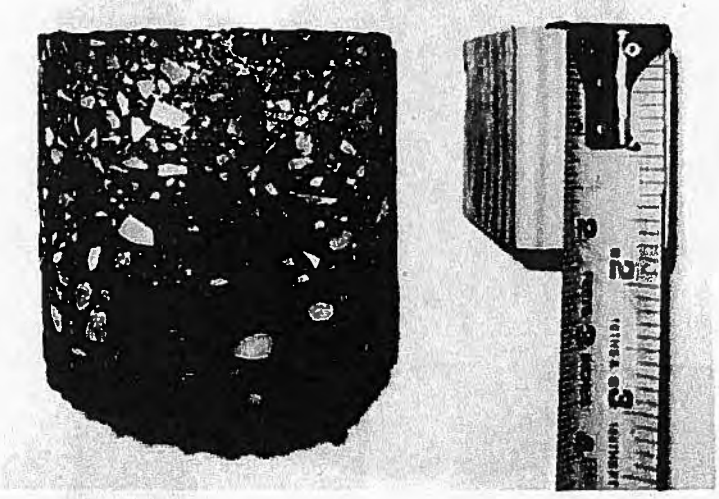
Soil Survey and Materials Report

TTL Project No. 100114037

CR-03



CR-04



Pavement Core Photographic Log

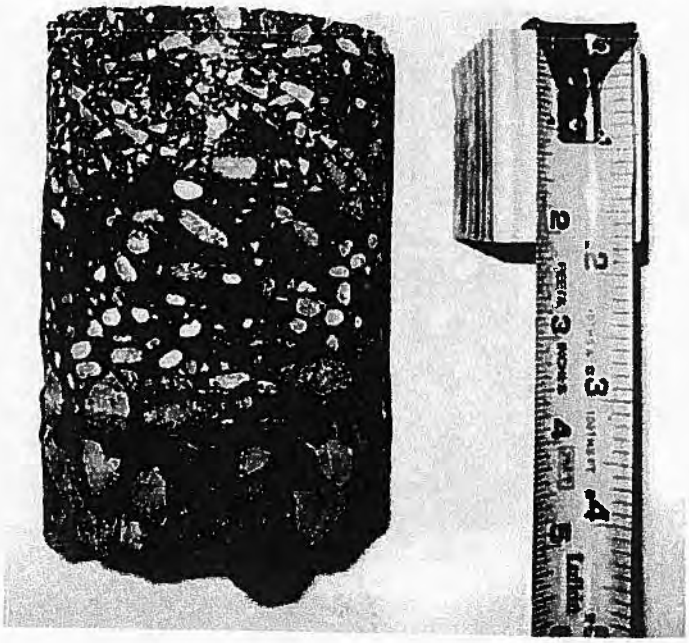
Alberta Parkway

Walker Associates, Inc.

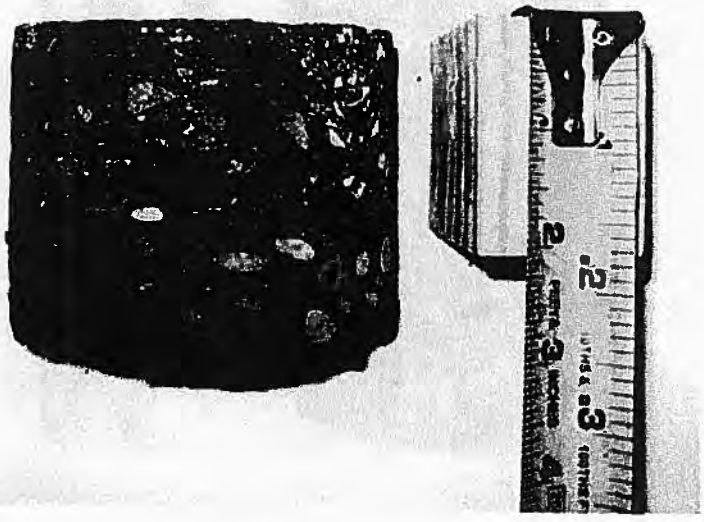
Soil Survey and Materials Report

TTL Project No. 100114037

CR-05



CR-06



Pavement Core Photographic Log

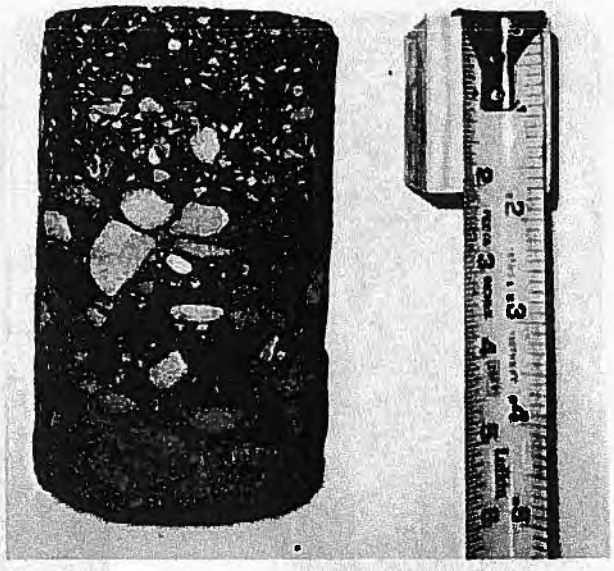
Alberta Parkway

Walker Associates, Inc.

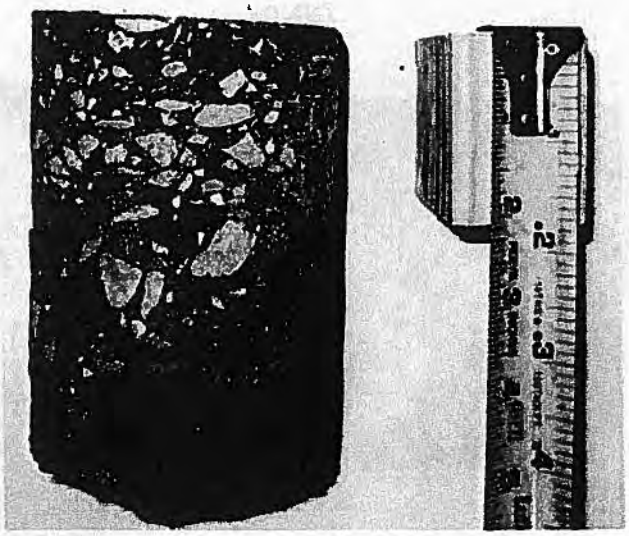
Soil Survey and Materials Report

TTL Project No. 100114037

CR-07



CR-08



Pavement Core Photographic Log

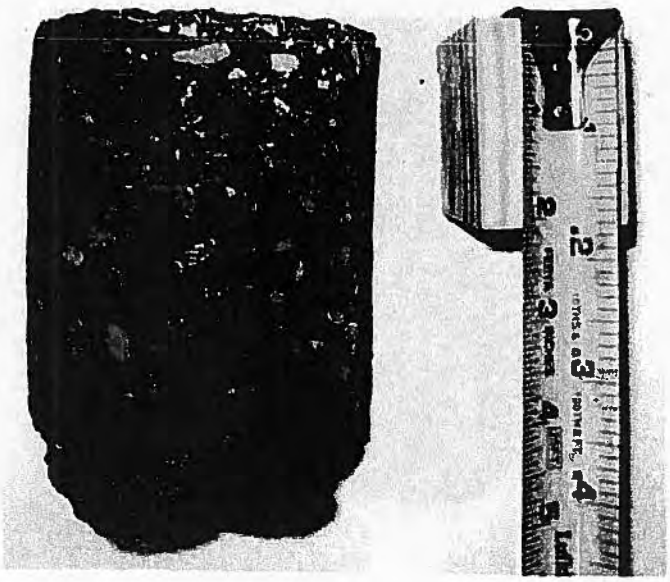
Alberta Parkway

Walker Associates, Inc.

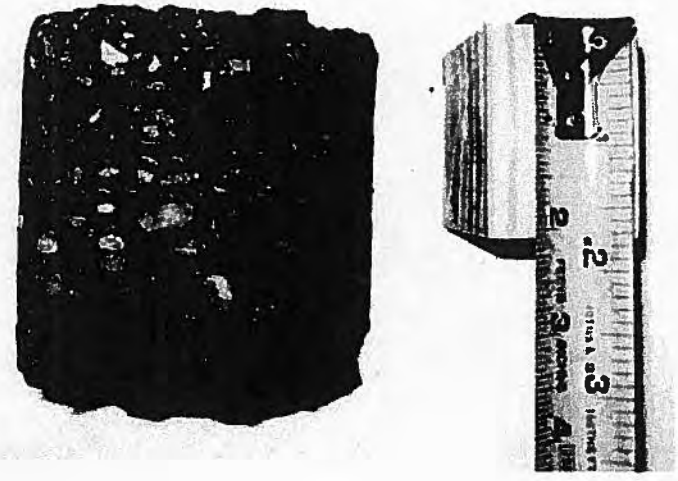
Soil Survey and Materials Report

TTL Project No. 100114037

CR-09



CR-10



Pavement Core Photographic Log

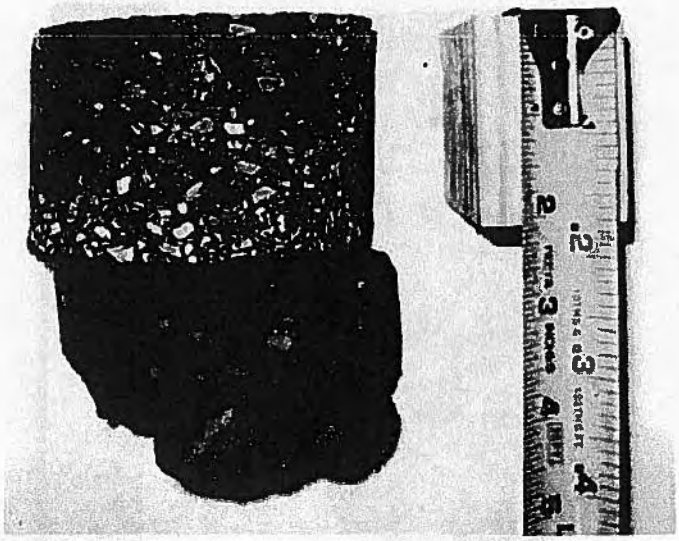
Alberta Parkway

Walker Associates, Inc.

Soil Survey and Materials Report

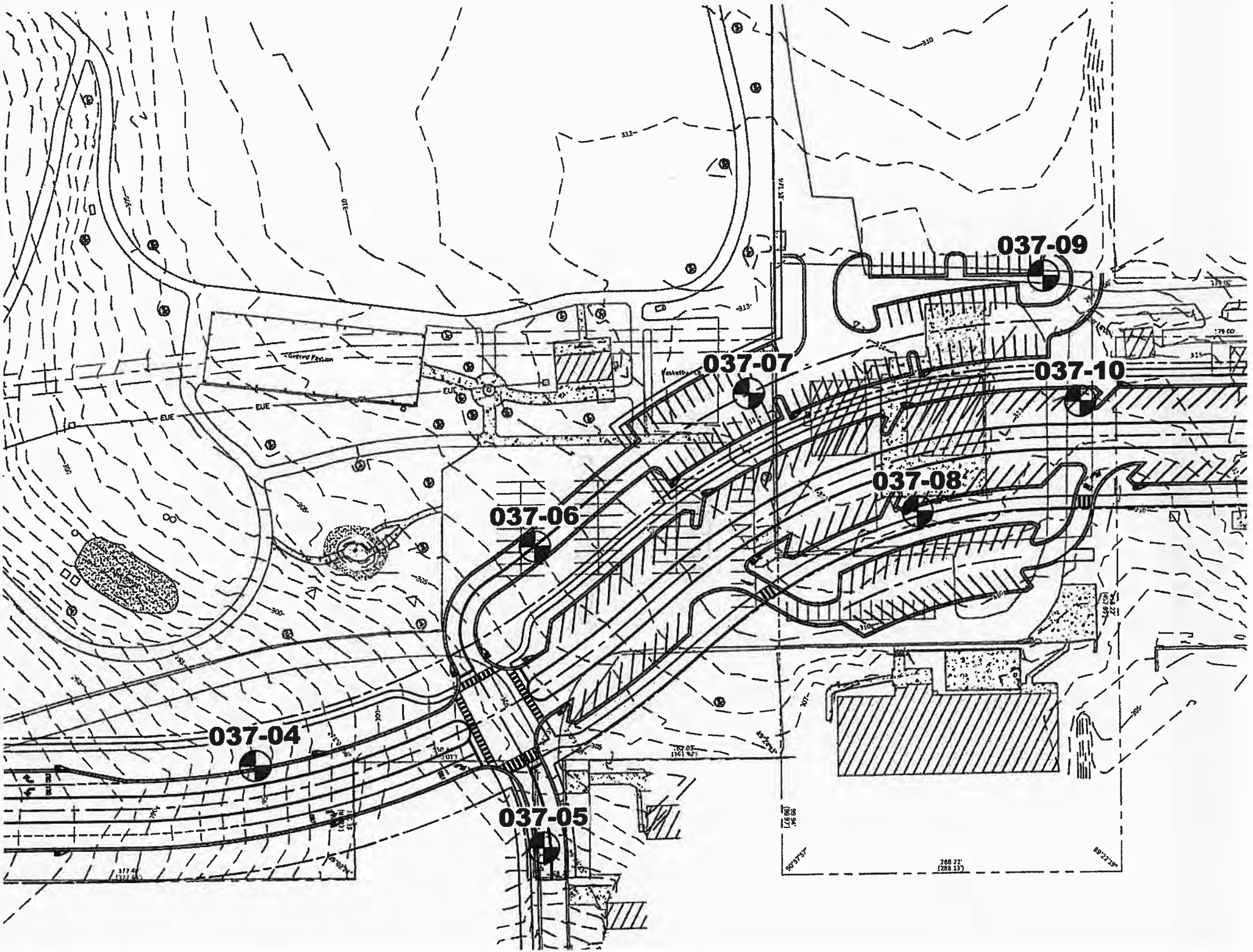
TTL Project No. 100114037

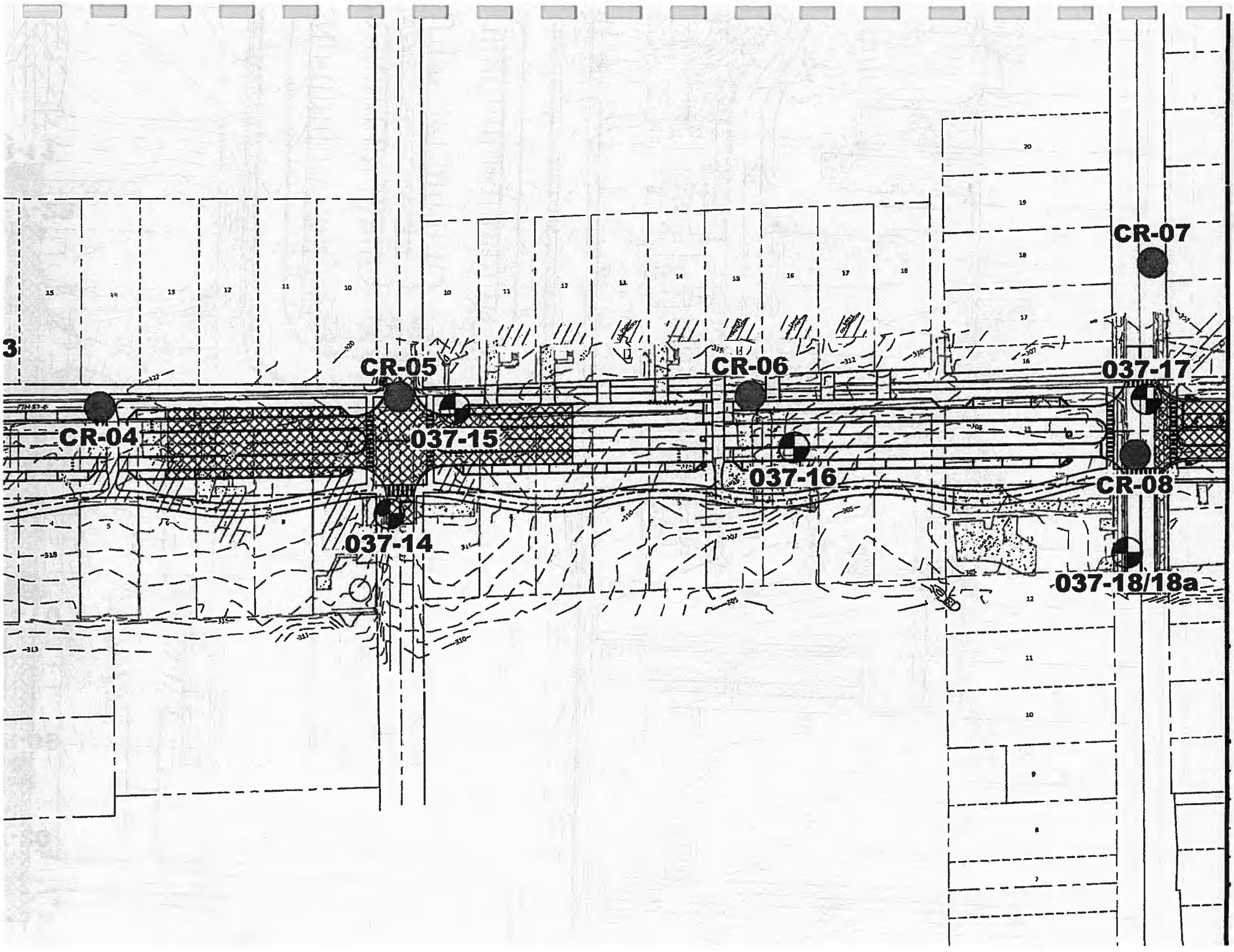
CR-11

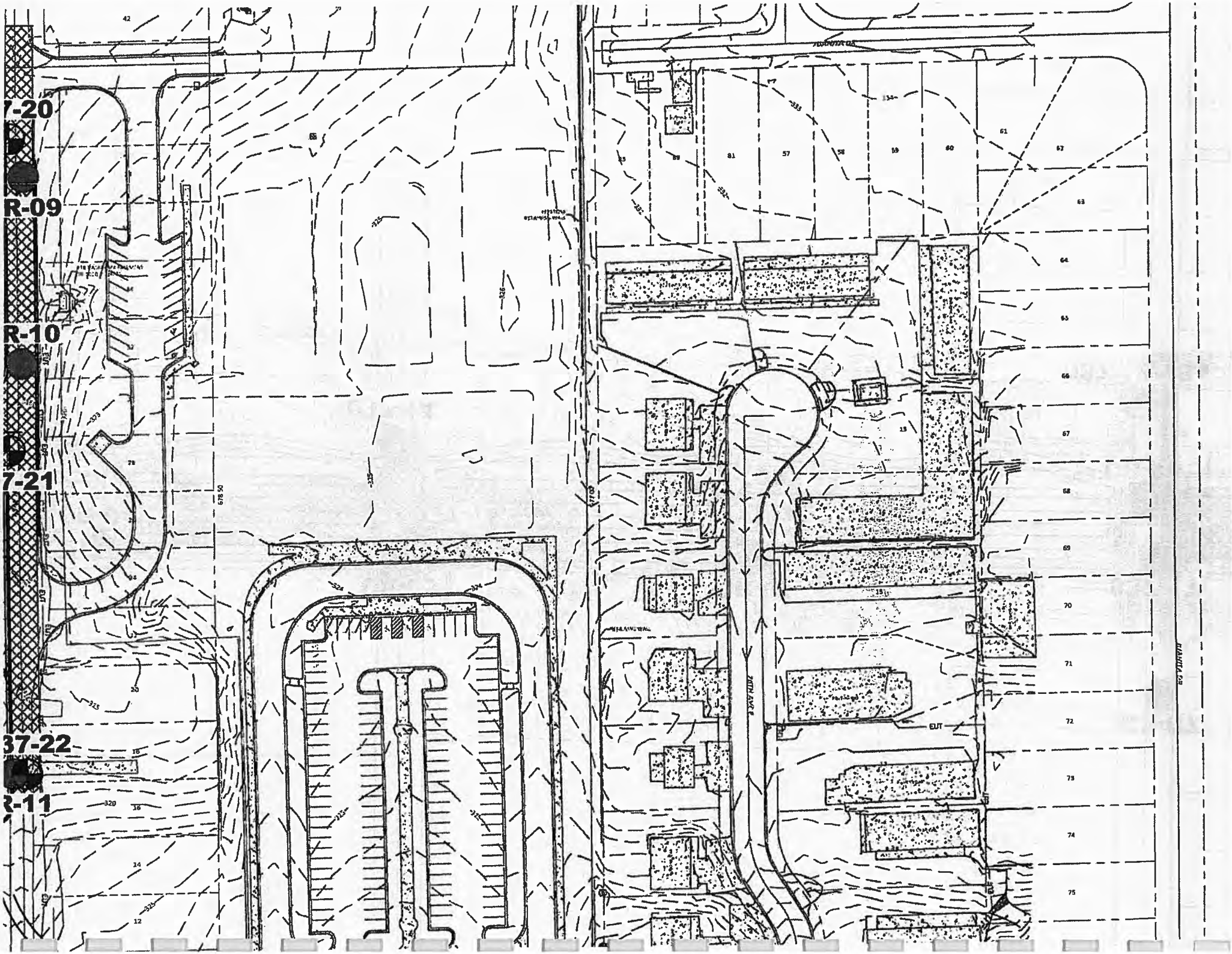


APPENDIX D

Boring Location Schematic


037-09
037-07
037-10
037-08
037-06
037-04
037-05


CR-07
CR-05
CR-06
037-17
CR-04
037-15
037-16
CR-08
037-14
037-18/18a


7-20
R-09
R-10
7-21
37-22
R-11
EXIT

APPENDIX E

Test Boring Records

FIELD EXPLORATION PROGRAM

General

Various drill equipment and procedures are used to obtain soil or rock specimens during geotechnical engineering exploration activities. The drill equipment typically consists of fuel-powered machinery that is mounted on a flatbed truck or an all-terrain vehicle. The ground surface conditions at the site generally determine the type of vehicle to use. A hand-powered auger may also be used for shallow borings in areas inaccessible to vehicle-mounted equipment. When assessing soil composition rather than soil strength, test pits may be excavated using standard construction equipment.

Borings can be drilled either dry or wet. The drilling technique depends on the type of subsurface materials (clays, sands, silts, gravels, rock) encountered and whether or not subsurface water is present during the drilling operations. Sometimes a combination of both techniques is implemented.

The dry method can generally be employed when subsurface water or granular soils are not present. The dry method generally consists of advancing the augers without the use of water or drilling fluids. Air can be employed as necessary to remove cuttings from the borehole or cool the drilling bits during some drilling applications. The wet rotary process is generally used when subsurface water, rock or granular soils are present. The wet rotary process utilizes water or drilling fluids to advance the augers, remove cuttings from the borehole, and cool the drilling bits during drilling.

Sampling

Various sampling devices are available to recover soil or rock specimens during the geotechnical exploration program. The type of sampling apparatus to employ depends on the subsurface materials (clays, sands, silts, gravels, rock) encountered and on their consistency or strength. Most commonly used samplers are Shelby tubes, split-spoons or split-barrels, and NQ or HQ core barrels. Depending on the subsurface conditions, sampling apparatus such as the Pitcher barrel, Osterberg sampler, Dennison barrel, or California sampler are sometimes used. The procedures for using and sampling subsurface materials with most of these samplers are described in detail in the most current edition of the American Society for Testing and Materials (ASTM) book titled Annual Book of ASTM Standards. Sampling is generally performed on a 1½-foot continuous interval to a depth of about 6 feet, followed by 2½-foot intervals between the depths of about 10 to 15 feet, on 5-foot intervals to 50 feet and on 10-foot intervals thereafter to the termination depth of the borings. However, sampling intervals may change depending on the project scope and actual subsurface conditions encountered.

If cohesive soils (clays and some silts) are present during drilling, samples are retrieved by using the Shelby tube sampler (ASTM D 1587) or the split-barrel sampler (ASTM D 1586). The Shelby tube is used to recover "virtually" undisturbed soil specimens that can be returned to the laboratory for strength and compressibility testing. The Shelby tube is a 3-inch nominal diameter, thin-walled tube that is advanced hydraulically into the soil by a single stroke of the drill equipment.

The split-barrel sampler is used when performing the Standard Penetration Test (SPT). The recovered sample is considered to be a "disturbed" specimen due to the SPT procedure. The split-barrel is advanced into the soil by driving the sampler with blows from a 140-pound hammer free falling 30 inches. The SPT procedure is performed to evaluate the strength or competency of the material being sampled. This evaluation is based on the material sampled, depth of the sample, and the number of blows required to obtain full penetration of the split-barrel sampler. This blow count or penetration resistance is referred to as the "N" value.

The split-barrel is typically used when cohesionless soils (sands, silts, gravels) are encountered or when good quality cohesive soils cannot be recovered with the Shelby tube sampler. The SPT procedure can be employed when rock or cemented zones are encountered. However, the split-barrel may not penetrate the rock or cemented zone if the layer is extremely hard, thus resulting in no sample recovery.

When hand augering is performed, Dynamic Cone Penetrometer (DCP) testing may be used in lieu of the Standard Penetration Test. DCP testing is typically performed at 1 to 2-foot intervals.

When rock or cemented zones are present, and depending on the type of project and engineering testing required, rock coring may be implemented to recover specimens of the particular layer. Typically an NQ or HQ core barrel (ASTM D 2113) is used.

Logging

During the drilling activities, one of our engineers, geologists or engineering technicians is present to make sure that the appropriate sampling techniques are employed and to extrude or remove all materials from the samplers. The samples are then visually classified by our field representative who records the information on a field boring log. Our field representative may perform pocket penetrometer, hand torvane, or field vane tests on the subsurface materials recovered from the Shelby tube samplers. If the SPT procedure is employed, our field representative will record the N values or blow counts that are germane to that particular field test. If rock coring is utilized, our field representative will calculate the percent recovery and Rock Quality Designation (RQD). The test data for all the field tests will be noted on the appropriate field boring log. Upon completion of the logging activities and field testing of the recovered soil or rock samples, representative portions of the specimens were placed in appropriately wrapped and sealed containers to preserve their natural moisture condition and to minimize disturbance during handling and transporting to our laboratory for additional testing.

When subsurface water is observed during the drilling and sampling operations, drilling will be temporarily delayed so the subsurface water level can be monitored for a period of at least 15 to 30 minutes. Depending on the rise of the subsurface water in the borehole and project requirements, subsurface water measurements may be monitored for periods of 24 hours or more. Generally observation wells or piezometers are installed in the completed boreholes to monitor subsurface water levels for periods longer than 24 hours.

Following completion of drilling, sampling, and subsurface water monitoring, all boreholes will be backfilled with soil cuttings from the completed borings unless special backfilling requirements are requested by the client. If there are not enough soil cuttings available, clean sand will be used to backfill the completed boreholes.

Details concerning the subsurface conditions are provided on each individual boring log presented in this Appendix. The terms and symbols used on each boring log are defined in the Symbol Key Sheet, which is also presented in this Appendix.

General Notes

Boring logs shown on the following sheets shall not be copied or altered.

Groundwater depths shown on the boring logs represent groundwater surfaces encountered on the dates shown. The absence of water surface data on certain borings implies that no groundwater data is available, but does not necessarily mean that groundwater will not be encountered at the locations or within the vertical reaches of these borings.

While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local minor variations in characteristics of the subsurface materials of the region are anticipated and, if encountered, such variations will not be considered as differing materially from the description shown with the logs or profiles.

Soils are classified in accordance with the Unified Soil Classification System, ASTM D 2487 and D 2488 for civil projects, American Association of State Highway and Transportation Officials M 145 for roadway projects and Military Standard 619B, dated 12 June 1968, for military projects.

Standard penetration is shown graphically. The blows per foot are determined by driving a standard split spoon sample (1-3/8" ID, 2" OD) with a 140 pound driving hammer dropping 30 inches (ASTM D1586) unless otherwise noted on the boring logs.

Special Note

Water table (if shown) is an approximation of the water elevation on the date shown. The water elevation may vary and may reach ground surface. Seepage above the water table can be expected at any time. Any conclusions drawn by the Contractor shall be the Contractor's sole responsibility.

DESCRIPTIVE TERMINOLOGY INCLUDED ON BORING LOGS

MOISTURE CONDITIONS

	Fine-Grained Soils	Coarse-Grained Soils
Dry	Seems dry, but contains some moisture	Contains no noticeable moisture
Moist	Moisture below the plastic limit	Contains a noticeable amount of moisture, but no appreciable free water
Very Moist	Moisture above the plastic limit, but below the liquid limit	
Wet	Moisture may approach the liquid limit	Contains free water, but voids are not water-filled
Saturated	Moisture is frequently at or above the liquid limit	Soil voids are water-filled or nearly so

STANDARD PENETRATION RESISTANCE (N)[1]

Sands (Cohesionless Soils)		Silts and Clays (Cohesive Soils)	
# of Blows, N	Relative Density	# of Blows, N	Relative Consistency
0 - 4	Very Loose	0 - 1	Very Soft
5 - 10	Loose	2 - 4	Soft
11 - 30	Firm (Medium)	5 - 8	Firm (Medium)
31 - 50	Dense	9 - 15	Stiff
Over 50	Very Dense	16 - 30	Very Stiff
		31 - 50	Hard
		Over 50	Very Hard

[1] Measured with 2 inch OD, 1-3/8 inch ID sampler driven 1 foot by 140 lb hammer falling 30 inches. See Standard Methods for Penetration Test and Split-Barrel Sampling of Soils, ASTM D 1586.

RELATIVE PROPORTIONS

Term	Range
Trace	Less than 10%
Little	10% - 20%
Some	20% - 30%
With	30% - 40%
And	40% - 50%

STANDARD ABBREVIATIONS

"WOH" = Weight Of Hammer
"WOR" = Weight Of Rod

LEGEND OF SYMBOLS

Soil (AASHTO Classification)

A-1	WELL GRADED GRAVEL OR SAND; MAY INCLUDE FINES
A-1a	LARGELY GRAVEL BUT CAN INCLUDE SAND AND FINES
A-1b	GRAVELLY SAND OR GRADED SAND; MAY INCLUDE FINES
A-2	SANDS AND GRAVELS WITH FINES
A-2-4	SANDS, GRAVELS WITH ELASTIC SILT FINES LL=<40, PI=<10
A-2-5	SANDS, GRAVELS WITH ELASTIC SILT FINES LL>=41, PI=<10
A-2-6	SANDS, GRAVELS WITH CLAY FINES LL=<40, PI>=11
A-2-7	SANDS, GRAVELS WITH HIGHLY PLASTIC CLAY FINES LL>=41, PI>=11
A-3	FINE SANDS
A-4	LOW COMPRESSIBILITY SILTS
A-5	HIGH COMPRESSIBILITY SILTS, MICACEOUS SILTS
A-6	LOW-TO-MEDIUM COMPRESSIBLITY CLAYS
A-7	HIGH COMPRESSIBILITY CLAYS
A-7-5	HIGH COMPRESSIBILITY SILTY CLAYS PI=<LL-30
A-7-6	HIGH COMPRESSIBILITY, HIGH VOLUME-CHANGE CLAYS PI>LL-30
A-8	PEAT, HIGHLY ORGANIC SOILS

Rock

- CHALK
- COAL
- DOLOMITE
- GNEISS
- GRANITE
- LIMESTONE
- QUARTZITE
- SANDSTONE
- SAPROLITE
- SCHIST
- SHALE
- SILTSTONE

Other Materials

- BITUMINOUS CONCRETE
- BOULDERS & COBBLES
- CONCRETE
- CRUSHED STONE
- DEBRIS
- FILL
- TOPSOIL

Samplers

- AUGER CUTTINGS
- BULK SAMPLE
- CONTINUOUS SAMPLER
- DYNAMIC CONE PENETROMETER
- PITCHER SAMPLER or PRESSUREMETER
- ROCK CORE
- SHELBY TUBE
- SPLIT SPOON
- NO RECOVERY

Water Level Symbols

▽	WATER LEVEL AT TIME OF DRILLING
▼	DELAYED WATER LEVEL
	CAVE-IN DEPTH

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ALBERTA PARKWAY

Tuscaloosa County

LOG OF BORING 037-01

Drilling Co.:	*TTL, Inc.*	**TTL** Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166932 E: 1964656*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 6.5 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
			A-3	Very stiff to firm, moist, brown poorly-graded SAND with gravel					
1			A-6	Firm, moist, brown and gray lean CLAY	8			4 - 16 - 9 N = 25	
2					14			4 - 4 - 4 N = 8	
3									
4								4 - 4 - 4 N = 8	
				Very soft, moist, brown and gray lean CLAY					
5					24			WOH - WOH - WOH N = 0	
6									
7				Very stiff, moist, light brown and gray lean CLAY					
8									
9									
10					25			5 - 8 - 12 N = 20	
11				Boring terminated at 11 feet.					

GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot): 10 20 30 40 50

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This boring log shall not be separated from the corresponding instrument of Service; no third party may rely upon this boring log or the corresponding instrument of Service absent a written TTL Secondary Client Agreement.

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ALBERTA PARKWAY
Tuscaloosa County

LOG OF BORING 037-02
Page 1 of 1

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166741 E: 1964760*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				TOPSOIL (4")					
1			A-6	Stiff, moist, brown lean CLAY with roots, asphalt millings and gravel	10			8 - 7 - 5 N = 12	
2				Firm, moist, brown lean CLAY	14			3 - 3 - 4 N = 7	
3									
4					20			3 - 3 - 3 N = 6	
5				Soft, very moist, light brown lean CLAY with sand	20			2 - 1 - 3 N = 4	
6									
7				Stiff, moist, gray and brown lean CLAY					
8									
9									
10					19			3 - 4 - 5 N = 9	
11				Boring terminated at 11 feet.					

GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot): 10 20 30 40 50

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LOG OF BORING 037-03

Drilling Co.:	*TTL, Inc.*	**TTL** Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166582 E: 1964749*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 7 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	TYPE	SAMPLE DATA: SPT/CORE DATA (1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC)	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-6	Very stiff, moist, reddish-brown lean CLAY	17			3 - 6 - 11 N = 17	
2				Hard to stiff, moist, brown sandy lean CLAY	17			12 - 15 - 16 N = 31	
4					17			6 - 6 - 9 N = 15	
5			A-2	Firm, moist, yellowish-brown silty SAND	17			8 - 10 - 15 N = 25	
8				Firm, moist, light gray and red silty SAND	15			5 - 8 - 11 N = 19	
11				Boring terminated at 11 feet.					

10 20 30 40 50

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This boring log shall not be separated from the corresponding instrument of Service; no third party may rely upon this boring log or the corresponding instrument of Service absent a written TTL Secondary Client Agreement.

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LOG OF BORING 037-04

Drilling Co.:	*TTL, Inc.*	**TTL** Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166792 E: 1965032*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" 2nd 6" 3rd 6" N-VALUE / RQD % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				TOPSOIL (8")					
1			A-4	Firm to stiff, moist, red sandy lean CLAY	12			3 - 4 - 3 N = 7	
2					17			3 - 4 - 5 N = 9	
3				Stiff to very stiff, moist, red and brown sandy lean CLAY					
4					17			3 - 5 - 8 N = 13	
5					15			7 - 9 - 12 N = 21	
6									
7									
8			A-6	Very stiff, moist, yellowish-brown sandy lean CLAY					
9									
10					18			7 - 8 - 9 N = 17	
11				Boring terminated at 11 feet.					

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This boring log shall not be separated from the corresponding instrument of Service; no third party may rely upon this boring log or the corresponding instrument of Service absent a written TTL Secondary Client Agreement.

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LOG OF BORING 037-05
Page 1 of 1

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166718 E: 1965275*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 3 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" N-VALUE	RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-2	Firm, moist, red clayey SAND with gravel						
1			A-4	Stiff to very stiff, moist, red sandy lean CLAY	10			5 - 6 - 5 N = 11		
2					17			6 - 7 - 10 N = 17		
3				Stiff to very stiff, moist, red sandy lean CLAY						
4					17			6 - 5 - 6 N = 11		
5					17			4 - 8 - 15 N = 23		
6										
7										
8			A-2	Firm, moist, red clayey SAND						
9										
10					11			9 - 12 - 14 N = 26		
11				Boring terminated at 11 feet.						

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LOG OF BORING 037-06
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Drilling Co.:	*TTL, Inc.*	**TTL** Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166975 E: 1965269*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				Asphaltic CONCRETE (3")					
				Crushed AGGREGATE (4")					
1			A-4	Stiff, moist, dark red sandy lean CLAY					
2					17			3 - 4 - 6 N = 10	
3									
4					18			3 - 3 - 6 N = 9	
5									
6					17			5 - 7 - 8 N = 15	
7				Very stiff, moist, red and brown sandy lean CLAY					
8									
9									
10					14			6 - 8 - 10 N = 18	
11				Boring terminated at 11 feet.					

GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot): 10 20 30 40 50

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LOG OF BORING 037-07

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167104 E: 1965451*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				TOPSOIL (3")					
1			A-6	Very stiff, moist, brown lean CLAY	10			10 - 11 - 8 N = 19	
2			A-4	Very stiff to stiff, moist, reddish-brown sandy lean CLAY	18			4 - 4 - 6 N = 10	
3									
4					18			3 - 4 - 5 N = 9	
5									
6					18			2 - 3 - 6 N = 9	
7				Very stiff, moist, red and brown sandy lean CLAY					
8									
9									
10					15			6 - 10 - 11 N = 21	
11				Boring terminated at 11 feet.					

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LOG OF BORING 037-08

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167001 E: 1965594*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	TYPE	SAMPLE DATA: SPT/CORE DATA (1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC)	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				TOPSOIL (4")					
1			A-6	Stiff, moist, brown lean CLAY with gravel and roots	15			6 - 5 - 4 N = 9	
2				Stiff, moist, red lean CLAY with sand	19			4 - 5 - 9 N = 14	
3				Very stiff, moist, red and brown lean CLAY with sand	18			3 - 9 - 9 N = 18	
4									
5					17			7 - 9 - 12 N = 21	
6									
7				Very stiff, moist, red sandy lean CLAY					
8									
9									
10					15			7 - 9 - 10 N = 19	
11				Boring terminated at 11 feet.					

GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot): 10 20 30 40 50

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LOG OF BORING 037-09

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167201 E: 1965702*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" 2nd 6" 3rd 6" N-VALUE	RQD % REC
				TOPSOIL (3")					
1			A-6	Firm to stiff, moist, dark red lean CLAY with sand	16			9 - 4 - 4 N = 8	
2					20			3 - 4 - 4 N = 8	
3									
4					18			3 - 4 - 7 N = 11	
5				Very stiff, moist, dark red lean CLAY with sand	17			8 - 10 - 14 N = 24	
6									
7				Very stiff, moist, red and brown sandy lean CLAY					
8									
9									
10					17			5 - 8 - 11 N = 19	
11				Boring terminated at 11 feet.					

GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
10 20 30 40 50

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LOG OF BORING 037-10

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167094 E: 1965732*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" 2nd 6" 3rd 6" N-VALUE / RQD % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				TOPSOIL (6")					
1			A-6	Very stiff, moist, dark red lean CLAY with sand	15			9 - 9 - 7 N = 16	
2					16			8 - 11 - 15 N = 26	
3				Very stiff, moist, red and brown sandy lean CLAY					
4					19			7 - 11 - 13 N = 24	
5					18			7 - 9 - 12 N = 21	
6									
7									
8									
9									
10					18			6 - 11 - 14 N = 25	
11				Boring terminated at 11 feet.					

GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot): 10 20 30 40 50

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LOG OF BORING 037-11

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167199 E: 1965965*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 4 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-2	Loose, moist, brown clayey SAND with gravel					
			A-6	Firm, moist, brown lean CLAY with sand	12			7 - 3 - 3 N = 6	
1									
				Stiff to firm, moist, red lean CLAY					
2					23			3 - 4 - 5 N = 9	
3									
					21			2 - 3 - 3 N = 6	
4									
				Very stiff, moist, red lean CLAY					
5					18			5 - 9 - 9 N = 18	
6									
7									
8				Very stiff, moist, brown sandy lean CLAY					
9									
10					17			4 - 7 - 11 N = 18	
11				Boring terminated at 11 feet.					

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LOG OF BORING 037-12
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Drilling Co.:	*TTL, Inc.*	**TTL** Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166945 E: 1965962*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 3.5 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" N-VALUE	RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-6	Stiff, moist, brown lean CLAY	19			3 - 4 - 7 N = 11		
2				Very stiff, moist, red lean CLAY	19			9 - 11 - 18 N = 29		
4					16			6 - 10 - 12 N = 22		
5					17			6 - 10 - 12 N = 22		
8				Very stiff, moist, light brown sandy lean CLAY						
10					16			5 - 9 - 12 N = 21		
11				Boring terminated at 11 feet.						

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LOG OF BORING 037-13

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167125 E: 1966093*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	TYPE	SAMPLE DATA: SPT/CORE DATA (1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC)	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				TOPSOIL (8")					
1			A-6	Stiff, moist, reddish-brown lean CLAY	15			5 - 5 - 4 N = 9	
2				Very stiff, moist, red lean CLAY with sand	17			4 - 6 - 10 N = 16	
3									
4					18			4 - 10 - 10 N = 20	
5				Very stiff, moist, dark red lean CLAY with sand	18			4 - 9 - 12 N = 21	
6									
7									
8				Very stiff, moist, light brown sandy lean CLAY					
9									
10					17			5 - 10 - 12 N = 22	
11				Boring terminated at 11 feet.					

GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot): 10 20 30 40 50

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LOG OF BORING 037-14

Drilling Co.:	*TTL, Inc.*	**TTL** Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167004 E: 1966448*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 5.5 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	TYPE	SAMPLE DATA: SPT/CORE DATA (1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC)	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-6	Stiff, moist, red lean CLAY	19			3 - 4 - 5 N = 9	
2				Hard to very stiff, moist, brown lean CLAY	20			6 - 13 - 19 N = 32	
4					13			5 - 8 - 14 N = 22	
5				Very stiff, moist, brown and red lean CLAY	17			7 - 8 - 12 N = 20	
8			A-2	Firm, moist, red and light gray silty SAND	15			8 - 16 - 14 N = 30	
11				Boring terminated at 11 feet.					

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LOG OF BORING 037-15

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167096 E: 1966505*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 4 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-3	Loose, moist, brown poorly-graded SAND with gravel					
1			A-6	Firm, moist to very moist, dark brown lean CLAY with sand	9			6 - 4 - 2 N = 6	
2					24			2 - 2 - 3 N = 5	
3				Firm, very moist, dark brown lean CLAY with sand	22			1 - WOH - 1 N = 1	
4									
5				Firm, very moist, brown and red lean CLAY with sand	25			2 - 3 - 4 N = 7	
6									
7									
8				Very stiff, moist, light brown lean CLAY					
9									
10					18			6 - 10 - 13 N = 23	
11				Boring terminated at 11 feet.					

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LOG OF BORING 037-16

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167060 E: 1966799*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	SAMPLE DATA: TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				TOPSOIL (6")					
1			A-6	Stiff to very stiff, moist, reddish-brown lean CLAY with sand	14			7 - 7 - 4 N = 11	
2					17			5 - 7 - 12 N = 19	
3									
4					17			6 - 10 - 13 N = 23	
5				Very stiff, moist, reddish-brown sandy lean CLAY	17			6 - 9 - 12 N = 21	
6									
7									
8			A-2	Firm, moist, reddish-brown clayey SAND					
9									
10					16			6 - 8 - 11 N = 19	
11				Boring terminated at 11 feet.					

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LOG OF BORING 037-17
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Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167100 E: 1967104*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 5.5 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA 1st 6" 2nd 6" 3rd 6" N-VALUE	RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-6	Stiff, moist, brown lean CLAY with sand	12			17 - 5 - 5 N = 10		
2			A-3	Loose, moist, brown poorly-graded SAND	15			5 - 5 - 5 N = 10		
3			A-2	Loose, moist, brown clayey SAND	14			5 - 4 - 2 N = 6		
5			A-6	Soft, wet, gray and brown lean CLAY with sand	28			WOH - WOH - 3 N = 3		
7				Stiff, moist, gray and brown lean CLAY with sand	19			4 - 7 - 8 N = 15		
11				Boring terminated at 11 feet.						

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LOG OF BORING 037-18

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*4.5 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166965 E: 1967088*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 4 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" N-VALUE	RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-3	Firm, moist, gray poorly-graded SAND with gravel						
1			A-6	Very stiff, moist, brown sandy lean CLAY	7			16 - 16 - 9 N = 25		
2				Firm, moist, brown sandy lean CLAY	9			5 - 5 - 3 N = 8		
3			A-2	Very loose, moist, brown clayey SAND with gravel	13			WOH - WOH - 3 N = 3		
4				Unmarked water line encountered at approximately 4 feet						
				Boring terminated at 4.5 feet.						
5										
6										
7										
8										
9										
10										
11										

T:\PROJECTS\2014\100114\037 ALBERTA PARKWAY\114-037 LOGS.GPJ 06/26/14 Report:2009 GEOTECH W/SPT (AASHTO)

This boring log shall not be separated from the corresponding instrument of Service; no third party may rely upon this boring log or the corresponding instrument of Service absent a written TTL Secondary Client Agreement.

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WALKER ASSOCIATES, INC.
ALBERTA PARKWAY
Tuscaloosa County

LOG OF BORING 037-18a
Page 1 of 1

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166965 E: 1967088*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" 2nd 6" 3rd 6" N-VALUE / RQD % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
				TOPSOIL (3")					
1			A-4	Stiff to firm, moist, brown sandy lean CLAY	10			9 - 6 - 4 N = 10	
2					14			3 - 3 - 3 N = 6	
3				Firm, very moist, light brown sandy lean CLAY					
4					20			1 - 2 - 3 N = 5	
5				Firm, moist, light brown sandy lean CLAY with iron staining	18			3 - 3 - 5 N = 8	
6									
7									
8			A-6	Very stiff, moist, light brown and gray lean CLAY with sand					
9									
10					20			4 - 7 - 12 N = 19	
11				Boring terminated at 11 feet.					

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ALBERTA PARKWAY

Tuscaloosa County

LOG OF BORING
037-19

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*5/22/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167078 E: 1967264*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" N-VALUE	RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0				TOPSOIL (12")						
1			A-4	Firm to soft, moist, brown sandy lean CLAY	14			2 - 3 - 3 N = 6		
2					16			2 - 2 - 2 N = 4		
3										
4					18			2 - 1 - 2 N = 3		
5			A-6	Stiff, moist, red sandy lean CLAY	16			4 - 6 - 9 N = 15		
6										
7				Very stiff, moist, light brown, red and gray sandy lean CLAY						
8										
9										
10					18			7 - 11 - 14 N = 25		
11				Boring terminated at 11 feet.						

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Tuscaloosa County

LOG OF BORING 037-20

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167328 E: 1967417*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water encountered at an approximate depth of 4.5 feet Below Land Surface at time of drilling.

Materials description begins at bottom of core sample: Asphaltic concrete = 4 inches

▽ Water level at time of boring.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-2	Dense to firm, moist, brown clayey SAND with gravel	8			8 - 10 - 22 N = 32	
1									
2					6			20 - 8 - 6 N = 14	
3			A-6	Soft, very moist, dark brown lean CLAY	22			5 - 3 - 1 N = 4	
4					▽				
5				Very soft, saturated, gray lean CLAY with sand	25			WOH - WOH - WOH N = 0	
6									
7				Very stiff, moist, red, brown and gray sandy lean CLAY					
8									
9									
10					17			6 - 10 - 11 N = 21	
11				Boring terminated at 11 feet.					

10 20 30 40 50

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ALBERTA PARKWAY

Tuscaloosa County

LOG OF BORING 037-21

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1167058 E: 1967417*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 5 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	SAMPLE DATA: MOISTURE (%)	PPV (tsf)	TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
			A-2	Loose, moist, brown clayey SAND with gravel					
			A-4	Very stiff, moist, red sandy lean CLAY	12			6 - 5 - 11 N = 16	
1									
				Hard to very stiff, moist, red sandy lean CLAY	18			13 - 17 - 22 N = 39	
2									
3					17			8 - 11 - 13 N = 24	
4									
5					17			9 - 14 - 14 N = 28	
6									
7									
8			A-6	Very stiff, moist, light brown lean CLAY with sand					
9									
10					16			8 - 10 - 11 N = 21	
11				Boring terminated at 11 feet.					

10 20 30 40 50

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ALBERTA PARKWAY

Tuscaloosa County

LOG OF BORING 037-22

Drilling Co.:	*TTL, Inc.*	TTL Project No.:	*100114037*
Driller:	*R. Bell*	Date Drilled:	*4/24/2014*
Logged by:	*B. Wysock*	Boring Depth:	*11 feet*
Equipment:	*CME 550X*	Boring Elevation:	*Not Available*
Hammer Type:	*Automatic*	Coordinates:	*N: 1166778 E: 1967431*
Drilling Method:	*Hollow Stem Auger w/SPT Sampling*		

Remarks:
Water not encountered at time of drilling.

Materials description begins at bottom of core sample:
Asphaltic concrete = 4 inches

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	MATERIALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	SAMPLE DATA: TYPE	SPT/CORE DATA: 1st 6" / 2nd 6" / 3rd 6" / N-VALUE / RQD / % REC	GRAPHICAL REPRESENTATION OF STANDARD PENETRATION DATA (blows per foot)
0			A-2	Loose, moist, brown clayey SAND with gravel					
1			A-6	Firm, moist, red sandy lean CLAY	11			7 - 3 - 3 N = 6	
2				Firm to soft, moist to very moist, red lean CLAY	20			3 - 4 - 3 N = 7	
3					19			WOH - WOH - 2 N = 2	
4									
5				Stiff, moist, red lean CLAY with sand	19			3 - 5 - 5 N = 10	
6									
7				Stiff, moist, red and gray lean CLAY with sand					
8									
9									
10					17			4 - 5 - 8 N = 13	
11				Boring terminated at 11 feet.					

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ADDENDUM NO. 1

Date: April 17, 2015

Project Name: Alberta Revitalization Infrastructure Project Phase 1B for the City of Tuscaloosa

City Project Number: A12-1324
WA Project Number: 12-100

This addendum to drawings and specifications dated March 30, 2015 and any previous addenda for the above referenced project supersedes all contrary and conflicting information contained in said drawings, specifications and addenda. Said drawings, specifications and addenda are hereby amended in the following particulars that are in full force as part of this contract.

Bidders shall acknowledge receipt of this addendum on their bid.

ITEM NO. 1 – PRE-BID MEETING:

A mandatory pre-bid meeting was held at 10:00 a.m. on Thursday, April 16, 2015. The agenda meeting minutes (including electronic document release form) and sign-in sheet are attached.

ITEM NO. 2 – CONTRACTOR QUESTIONS:

1. Is it required to demo and complete the proposed work one city block at a time or can demolition over the entire area occur and then begin proposed improvements? *Contractor is not restricted to completing all work in a single city block at a time. However, the Contractor shall maintain any existing paved surfaces for as long as possible to maintain good public access along the existing roadways and provide all-weather working conditions. Once work begins in an area for items such as utilities, paving, etc., the proposed work should continue until complete. Existing roadways will not be allowed to be closed for the duration of the project but in phases to complete the work in the various areas and then open the areas back up to through traffic. This is especially important in areas of work adjacent to the existing residences on 7th Street East where all-weather access (at a minimum consisting of compacted stone backfill in all utility crossings) must be maintained to the residences throughout the project and in 25th Avenue East which currently serves as a detour for the bridge improvements on University Boulevard.*

END OF ADDENDUM NO. 1

Bradley Porter

Michael Bradley Porter, P.E.
Alabama Registration No. 30442

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ALBERTA REVITALIZATION INFRASTRUCTURE PROJECT PHASE 1B

TUSCALOOSA CITY HALL
NARASHINO ROOM

CITY OF TUSCALOOSA PROJECT NO. A12-1324
WALKER ASSOCIATES PROJECT NO. 12-100

PRE-BID AGENDA
(Meeting Minutes in Red)

Thursday, April 16, 2015, 10:00 a.m. CST

General:

- Welcome (Please Silence all Radios and Phones)
- Pre-Bid Conference is MANDATORY for all Bidders; Sign-In Sheet (Complete for Record) will be included with Addendum No. 1. Be sure to legibly write email address as all Addenda will be issued electronically via email.
- Name and Location of Project: Alberta Revitalization Infrastructure Project Phase 1B – 7th Street East between 23rd Avenue East and 26th Avenue East
- Introduce Owner and Owner's Representatives (City of Tuscaloosa, Walker Associates)
- Introduce Utility Companies (Alabama Power Company, Alagasco, AT&T, Comcast)

Project Summary:

- Overall Summary of the Project: Project includes municipal utility work including removal/replacement of storm drain, sanitary sewer, and water distribution. Lighting and technology below ground conduit and lighting wiring installation. Private utility improvements include below ground conduits and wiring. The respective private utility companies will install wiring through the conduits, energize the utility, and abandon the overhead utility. Contractor responsible for scheduling and coordination with private utility companies. Streetscape work shall include asphalt paving, curb and gutter, sidewalk, pavers, lighting, landscaping, and irrigation.
- Contract Documents (City of Tuscaloosa Contract Documents with Federal Supplemental Documents Housing and Urban Development (HUD). Review Federal Supplementals in the Contract Documents for any and all additional requirements.
- Davis-Bacon Wage Rates apply as per the Federal Supplemental Documents
- Contractors are encouraged to utilize minority subcontractors where applicable. The City of Tuscaloosa maintains a database which identifies eligible minority contractors and subcontractors.
- The contractor shall pay special attention to Exhibit A – City of Tuscaloosa MBE/DBE/WBE Policy for Public Works Projects over $50,000. Forms 1 & 2 included as part of Exhibit A must be completed and submitted to the Engineer by close of business **(5:00pm CST on April 16, 2015)**. These forms are attached to this agenda and could be completed and returned before leaving this meeting. Forms 3 & 4 must be completed and included with the Contractor's sealed bids. Omission of these forms could result in the bid being rejected if the bid is determined to not be responsive.
- The Contractor shall be required to comply with the Alabama Immigration Law and provide certification of the same by completing the sworn affidavit provided in the contract documents. This form is also required for all Subcontractors.
- Contract Documents: Drawings and Specifications are available for pickup at Walker Associates, Inc.

- Sales and Use Tax Savings: The project will be administered in compliance with the State of Alabama Act 2013-205, Certificate of Exemption from Sales and Use Tax for Governmental Entities, regarding sales and use taxes. The Contractor shall be responsible for obtaining a certificate of exemption from the Alabama Department of Revenue for purchases of materials and other tangible property made part of the project. Any subcontractors purchasing materials or other tangible personal property as part of the project shall also be responsible for obtaining a certificate of exemption. The estimate sales and use tax saving must be accounted for on the bid proposal. Failure to provide the estimated sales and use tax savings may render the bid as non-responsive. Other than determining responsiveness of the bid, sales and use tax accounting shall not affect the bid pricing nor shall be considered in the determination of the lowest responsible and responsive bidder

Receipt of Bids:

- Bids shall be received Monday, April 27, 2015 at 2:00 p.m. CST at the Tuscaloosa City Hall in the Narashino Room.
- Proposal Form and Unit Price Bid Schedule and receipt of all addenda (submit one copy with bid)
- Bid Bond with Power of Attorney
- Exhibit A - MBE/DBE/WBE Policy Forms 3 & 4
- Proposal Envelope must have Project Name, Owner Name, City of Tuscaloosa Project Number (A12-1324), Contractor Name, and Contractor State License Number on outside of envelope.

Contractual Requirements:

- Payment and Performance Bonds will be required for this project.
- Required Permits (ADEM-NPDES, City of Tuscaloosa, etc.) and all Licenses (City, State, Federal, etc.) for all Contractors involved on the project. Copies will be provided to Owner's Representative.
- Insurance Requirements: Contractor shall follow all insurance requirements set forth in the contract documents. Contractor shall be required to also carry Builder's Risk All Risk Insurance as part of this project.
- NPDES Permit – Permit shall be in the Contractor's name. The Contractor is responsible for preparation, submittal, and obtaining of the permit and all associated fees. This is further detailed in the contract documents.
- ***Construction Materials Testing (CMT)*** will be provided by the Owner and performed by TTL, Inc. The initial tests will be paid for by the Owner; however, subsequent tests will be the Contractor's responsibility. This includes any areas where compaction is already complete but then disturbed again, that area and any associated trenches must be recompacted to meet project requirements. The General Contractor is responsible for making sure that all subcontractors are aware and familiar with compaction requirements for the project.
- ***Construction Staking Services*** will be provided by the Owner and performed by Walker Associates, Inc. The items to be staked are noted as follows and shall be paid for by the Owner: horizontal and vertical location of the following – storm and sanitary sewer junctions and water mains with offsets, curb and gutter, horizontal light pole locations, street centerlines, street subgrade, base grade, and horizontal utility bank locations. The Owner shall provide staking one (1) time only. Negligence with Owner provided stakes will result in subsequent staking of the item(s) to be the Contractor's responsibility.
- ***Construction Observation Services*** will be provided by the Owner full time and performed by Walker Associates, Inc.
- Time for Completion will be **210 consecutive calendar days.**
- Liquidated Damages Amount: **$500.00 per day beyond the stated completion date.** (Amount shown on pre-bid agenda replaces amount shown in contract document spec book.)
- Record Drawings are required and will be prepared by the Owner's Representative. The Contractor shall coordinate any deviation from the plans with the Owner's Representative.
- Unit Price Contract: Bid Schedule can be found in the Contract Documents. Upon request by the Contractor, an electronic copy of the bid schedule can be provided. The Contractor shall be required to sign & submit an electronic release form. This form is attached to the prebid agenda & will also be included with Addendum

Project Coordination:

- Alabama Power Company, AT&T, Alagasco, Comcast Cable, TDOT Fiber Optic – Conduit and Equipment Installation (Very Important to Coordinate Material Pick-Up, Scheduling, etc. with Utility Companies as they are an integral part of the project). While the utility companies will be pulling the wiring in the conduits as required for this phase of the project, it is the Contractor's responsibility to schedule this work and coordinate with the respective utilities, so new underground utilities can be energized and existing above ground utilities can be removed and/or temporary relocation to maintain the project schedule. *The Utility Companies shall inspect the conduits fully for acceptance. A pull string shall be provided in each conduit and all conduits turned up shall be capped with a PVC cap.* ***Taping the open end shall not be accepted.*** *Before the conduits are turned over to the utility companies, they shall be fully cleaned removing all debris, dirt, water, etc. This final cleaning shall be scheduled with the Owner's Representative and the Utility Company for field verification. Failure to schedule this final cleaning shall result in another cleaning at the Contractor's expense with representatives on-site.*
- Private Utility Companies to assist with temporary relocations of existing overhead facilities and underground gas mains where required. *Alagasco shall not be making full relocations of their infrastructure. They plan to respond to the individual locations where there are conflicts. The Contractor shall anticipate this as he/she approaches these areas and pothole in advance of the utility being installed to give ample time for Alagasco to mobilize to relocate any gas mains needed to be relocated.*
- Scheduling and Traffic Control for Private Utility Companies: Contractor responsible for traffic control for private utility companies.
- Scheduling with Tuscaloosa Department of Transportation. The Contractor is to prepare and submit to Owner's Representative a detailed traffic control plan for any lane closures in advance of proposed work requiring closure. TCP will be reviewed by the Owner's Representative then shall be submitted to OCE and TDOT for approval prior to implementation of TCP and start of associated work. The Contractor shall at minimum plan on a one (1) week review period and time to address comments. Do not wait until the last minute to submit this plan, then expect approval right away. Project delays shall not be considered related to TCP review.
- Public/Private Residence and Vehicle Access: Contractor must maintain access to all existing business or residences. Any work which will affect access for these people shall be coordinated so alternate access is provided as needed. A minimum of 7-days notice is required and should be done in writing to those affected. A copy of the notification shall be provided to the Owner's Representative. No additional payment will be made for temporary stone required to maintain access to business or residences when sidewalk or driveway removal is required.
- Coordination with existing projects will be required. Work by Alabama Power Company will be ongoing at the adjacent substation as work is performed to expand the substation northwardly as shown in the plans. It will be the Contractor's responsibility to coordinate with any adjacent Contractor's and their projects to coordinate access to their site from this projects work. Any necessary road closures will need to be coordinate with these projects and the City of Tuscaloosa.
- Progress and Coordination Meetings: Progress and Coordination meetings will be required for the project. Time and frequency of these meeting will be determined prior to construction and as the project progresses.

Project Conditions:

- Construction Project Area – Defined by limits of work shown in plans. (As noted on construction plans, the exact limits may be slightly larger or smaller than indicated on the plans based on exact field conditions. The limits of work will be as necessary to construct the improvements shown.)
- Security at Site – No on-site security provided, recommend contractor secure equipment at end of work day. (The Contractor may use temporary construction fencing as necessary to protect their equipment and materials.)
- Job Site Offices and Safety for the project are the Contractor's responsibility.
- Erosion Control and Clean up (During and Post Construction)

Miscellaneous:

- Clarification Requests **WILL NOT** be accepted after Thursday, April 23rd at 5:00 p.m. All questions and clarification request shall be submitted in writing to the Project Engineer on or before this date and time.
- Material Submittals: If hard copies are provided, they shall be 3 ring bound – No Exceptions. Electronic copies of material submittals will be accepted and are preferred. Electronic submittals shall include transmittal summarizing items covered with respective material submittal.
- Lead Time on Material Items: Coordinate with all subs regarding material lead time. Material delays will not be a valid excuse for project delays or failure to complete on time.
- Pay Applications (Review and Submittal): Upon submittal of pay request, the Owner's Representative has 10 days to review pay application. Preferred method of pay application submittal process would be to meet on a predetermined quantity cut-off date to review and agree upon the quantities for that month's pay application. The Contractor will then prepare the pay application and all required supporting documentation (certified payroll, stored materials, etc.) and submit to Owner's Representative. If all required items are not submitted then the pay application will be returned for corrections. Upon receipt of a completed, approved pay application, it will then be forwarded to the City for final approval and processing.
- Any Temporary Piping for storm drainage shall be the Contractor's responsibility and shall be incidental to the project.

Proposed Addenda:

- Pre-Bid Agenda Meeting Minutes & Sign-In Sheet

Questions/Comments:

- Owner
  1. Contractor needs to include the work by the private utility companies in their project schedule.

- Utility Companies

- Bidders

Contractor's Questions:

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ADDENDUM NO. 2

Date: April 23, 2015

Project Name: Alberta Revitalization Infrastructure Project Phase 1B for the City of Tuscaloosa

City Project Number: A12-1324
WA Project Number: 12-100

This addendum to original drawings and specifications dated March 30, 2015 and any previous addenda for the above referenced project supersedes all contrary and conflicting information contained in said drawings, specifications and addenda. Said drawings, specifications and addenda are hereby amended in the following particulars that are in full force as part of this contract.

Bidders shall acknowledge receipt of this addendum on their bid.

ITEM NO. 1 – CONTRACTOR QUESTIONS:

1. Are the truncated dome pavers for the project required to be clay or concrete? *The City has approved the pavers to be either brick clay pavers or concrete pavers of the type specified in the details or an approved equal.*

2. The permeable concrete paver detail notes Belgard pavers or approved equal. Can you please clarify the particular type/style Belgard paver required for the project? *Concrete Pavers shall be as manufactured by Belgard, Aqua-Bric style pavers, or an approved equal. It is critical that the brick dimensions, specifically thickness and drainage area provided between pavers, be equal to ensure durability and drainage ability.*

3. Is the AquaPave permeable paver as manufactured by Red River Hardscapes approved as an alternate to the permeable paver noted in the plans? *Yes, the submitted AquaPave paver may be used as an alternative permeable concrete paver.*

4. The bid schedule list a quantity of 1,500 c.y. of Removal/Disposal/Replacement of Unsuitable Material but the Geotechnical Report references a total undercut quantity of 5,500 c.y. Please clarify. *The total quantity reflected in the geotechnical report is for all phases of the project, not just 1B. The quantity for undercut should be as shown on the bid proposal form for Phase 1B.*

5. Does the trench backfill detail for paved surfaces on C11.8 that shows stone backfill apply to the utilities under the permeable paver portions of the project? Or is this detail only required for utilities under asphalt and concrete paving. *Select stone backfill of utility trenches shall be required in any area where proposed utilities (storm, sanitary, water, conduit, etc.) crosses an existing asphalt or concrete paved area. In areas outside of existing paved areas but under proposed pavement (concrete, asphalt, pavers), the Contractor may use standard backfill (this includes suitable on-site native material or approved borrow material) compacted in the required lifts to 98% compaction as indicated in the plans. If the Contractor elects, select stone backfill*

mechanical consolidated could be used, in lieu of, standard backfill in these areas but would be done at no additional cost to the project.

6. Drawing E1.1, General Notes #1, reads that light poles and fixtures....and all associated appurtenances are supplied by the City. Based on previous similar City projects there are several items shown on the detail that did NOT come with the poles when ordered and therefore are NOT supplied by the City. Can you please clarify the following items on these poles as being provided by the City or provided by the Contractor: GFI receptacles, Wireless Access Points, Cameras, Outlet Boxes for Cameras, IT/Comm Boxes and whether the boxes come with the GFI Receptacle as detailed.
   - *GFI Receptacles - Upper and Lower (All GFI Receptacles shall be provided and installed by the Contractor)*
   - *Dedicated Circuit and Receptacles for the IT-Cabinet Comm. Boxes & WAP Locations (Provided and installed by the Contractor)*
   - *Wireless Access Points (Provided and Installed under a separate contract)*
   - *Cameras (N.I.C. - Provided and Installed under a separate contract)*
   - *NEMA 4X- 5"x5"x3" Boxes for Cameras (N.I.C. - Provided and Installed under a separate contract)*
   - *NEMA 4X- 5"x5"x3" Boxes for Wireless Access Points (Provided and installed by the Contractor)*
   - *IT-Cabinet Comm. Boxes (Provided by the City, Contractor to install. The IT-Cabinets do not come with a receptacle in them. The circuit and the receptacle in the IT-Cabinet shall be provided and installed by the Contractor).*

7. Not every light pole will receive every item that is indicated on the pole details on drawing E1.1. Is there any way to quantify which poles receive which details. The reason this needs to be clarified is that the poles will be ordered to have openings on every pole for a device in every possible location. Knowing that not all of the poles will get a camera, IT Comm box, etc., there needs to be enough blank plates and bolts delivered from the pole manufacturer to blank off the openings that will not get used on certain poles. *All poles will be ordered with the same openings, therefore, blank plates will be needed for each opening that does not receive any attached equipment. The Electrical Drawings in the construction documents indicate the poles that will have equipment installed such as IT-Cabinets, Cameras and WAP's. Also, a pole schedule has been provided as part of this Addendum to further clarify the pole type and whether they will include Cameras and WAP's.*

8. Can we clarify the size of the MC cables that need to be installed inside the poles for power and wireless access? Also, if a particular pole does NOT receive a certain device, please advise if a MC Cable for that device will still be required. *The MC Cable size can be 3/8", 1/2" and 3/4" as required for the electrical circuit connections. MC Cables will be used for all electrical circuits as indicated in the documents. If Seal Tight Conduit are used between the openings for technology connections (i.e. security cameras, wireless access points, and IT-Cabinet Box), the Seal Tight Conduit "MUST BE" attached to the low voltage NEMA 4X 5"x5"x3" Boxes in an appropriate manner.*

9. Have the poles and arms already been ordered and received for this phase of the project? *Poles and arms have been bid under a separate contract but have not been ordered at this time. Upon contract agreement with low bid contractor for this project, the City will coordinate with the Contractor on their project schedule for ordering and delivery of poles, arms, mounting hardware, etc.*

10. Per Civil Drawings C8.1 through C8.4, are the coordination drawings for APCO, AT&T, and Comcast available for review prior to this project's bid? *The highlighted conduit plans from each private utility company can be downloaded via the link below. Some of these were provided as hand sketches and highlighted drawings only. These were used to complete the bid conduit plans provided in the plans. Each utility company was met with and the bid conduit plans reviewed and approved. The bid conduit plans also include the conduit runs for the future technology improvements and the required lighting system. This information is being provided for reference only, but will have no bearing on the final plans. The final plans are the bid documents.*

    Phase 1B Private Utility Company Info PDF

11. Please clarify if and when expansion joint material is required for curb & gutter? *If curb and gutter is being hand formed, expansion joint material will be required on 50' intervals, at all radii points at concrete entrances and curb returns, at inlets, at end of work day locations, and/or all cold joints. Where curb and gutter is machined formed, expansion joint material is only required at end of work day locations and/or all cold joints.*

12. The irrigation controller specified for the project is a 12 Station Controller. There are 20 valves in the irrigation system. Should a 24 Station Controller be priced and the project controller specifications be revised? *The required irrigation controller for the project shall be revised to a Toro Sentinel Controller containing **48** stations. This is to accommodate the current phases of the project and also future phases.*

13. There are 2 different wage rate scales listed in the specs (AL-2 and AL-148). AL-2 lists the construction type as "highway" and AL-148 lists the construction type as "heavy". The wage rates are different between the two scales. For example, an electrician's wage rate for AL-2 "highway" is $19.73 with no fringe benefits and the wage for an electrician under AL-148 "heavy" is $23.50 with 13%+$6.93 fringe benefits. Please clarify which wage scale applies. *The Wage Rate Scale for "Heavy" AL-148 shall be disregarded for this project and only the "Highway" AL-2 shall be used for the project.*

ITEM NO. 2 – ELECTRICAL PLAN SHEETS & LIGHT POLE SCHEDULE:

The following plans sheets have been revised to provide clarification to the above questions and shall replace the original plan sheets found in the contract documents in their entirety. Also, a light pole scheduled has been added to clarify the pole types and whether the various poles include cameras and WAP's.

Sheets E1.1, E1.2, E1.3, E2.0, E2.1, & E2.2
Light Pole Schedule

END OF ADDENDUM NO. 2

Bradley Porter

Michael Bradley Porter, P.E.
Alabama Registration No. 30442

POLE SCHEDULE					
POLE	TYPE "A"	TYPE "B"	TYPE "C"	CAMERA	WAP
LPA1			-		
LPA2			-	-	
LPA3			-		
LPA4			-	-	-
LPA5			-		
LPA6			-	-	
LPA7			-		
LPB1	-				
LPB2	-				
LPB3	-				
LPB4	-				
LPB5	-				
LPB6	-				
LPC1			-	-	
LPC2			-		
LPC3			-	-	-
LPC4			-		
LPD1			-		
LPD2			-	-	
LPD3			-		
LPD4			-	-	
LPE1	-				
LPE2	-				
LPE3	-				
LPE4	-				
LPE5	-				
LPE6	-				
LPF1			-	-	-
LPF2			-		
LPF3	-				
LPF4			-	-	
LPF5	-				
LPF6			-		
LPF7			-	-	
LPF8			-		
LPF9			-	-	-
LPG1			-	-	
LPG2			-	-	-
LPG3		-		-	
LPG4		-		-	-

WALKER ASSOCIATES, INC.
ENGINEERING, PLANNING, GIS & SURVEYING

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ADDENDUM NO. 3

Date: April 24, 2015

Project Name: Alberta Revitalization Infrastructure Project Phase 1B for the City of Tuscaloosa

City Project Number: A12-1324
WA Project Number: 12-100

This addendum to original drawings and specifications dated March 30, 2015 and any previous addenda for the above referenced project supersedes all contrary and conflicting information contained in said drawings, specifications and addenda. Said drawings, specifications and addenda are hereby amended in the following particulars that are in full force as part of this contract.

Bidders shall acknowledge receipt of this addendum on their bid.

ITEM NO. 1 – REVISED BID DATE & TIME:

The bid date and time has been rescheduled to **Tuesday, April 28, 2015, at 10:00am CST**. The location is unchanged and will remain at the **City of Tuscaloosa City Hall Narashino Room**.

ITEM NO. 2 – CONTRACTOR QUESTIONS:

1. The details for the metal bench and trash receptacle call for a Victor Stanley RB-28 Bench and RB-36 Trash Receptacle or approved equal, but the drawing appears to reflect a slightly different model. Can you please confirm the model bench and trash receptacle required? *The bench shall be the RB-28, 8' bench with the intermediate armrests and center leg as manufactured by Victor Stanley or approved equal. The trash receptacle shall be the RB-36 as manufactured by Victor Stanley or approved equal.*

END OF ADDENDUM NO. 3

Bradley Porter

Michael Bradley Porter, P.E.
Alabama Registration No. 30442

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ADDENDUM NO. 3

Date: April 24, 2015

Project Name: Alberta Revitalization Infrastructure Project Phase 1B
for The City of Tuscaloosa

City Project Number: 439-1324
State Project Number: 12-1300

This addendum to original drawings and specifications dated March 30, 2015 and any previous addenda for the above referenced project supersedes all contrary and conflicting information contained in said drawings, specifications and addenda. Said drawings, specifications and addenda are hereby amended in the following particulars that are in full force as part of this contract.

Bidders shall acknowledge receipt of this addendum on their bid.

ITEM NO. 1 – REVISED BID DATE & TIME:

The bid date and time has been rescheduled to Tuesday, April 28, 2015, at 10:00am CST. The location is unchanged and will remain at the City of Tuscaloosa City Hall Annex Room.

ITEM NO. 2 – CONTRACTOR QUESTIONS:

1. The details for the metal beam guard fence post call out on Sheets RB-1 & RB-2 are not clear. Is it acceptable to proceed using the details provided in the Alberta Revitalization Phase 1A model. Can you please confirm the round tubing specified is the correct size? Is the 6x6 x 3/8" thick wall flange mentioned anywhere else? Is the 6x6 x 3/8" thick wall flange specified on the Alberta Revitalization Phase 1A model acceptable?
   Reply: Please proceed using the details provided in the RB-1&2 as mentioned by Walker Associates.

END OF ADDENDUM NO. 3

Walker Associates, Inc.
Alabama Registration No. 30172

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ADDENDUM NO. 4

Date: April 27, 2015

Project Name: Alberta Revitalization Infrastructure Project Phase 1B for the City of Tuscaloosa

City Project Number: A12-1324
WA Project Number: 12-100

This addendum to original drawings and specifications dated March 30, 2015 and any previous addenda for the above referenced project supersedes all contrary and conflicting information contained in said drawings, specifications and addenda. Said drawings, specifications and addenda are hereby amended in the following particulars that are in full force as part of this contract.

Bidders shall acknowledge receipt of this addendum on their bid.

ITEM NO. 1 – REVISED BID SCHEDULE:

Replace the original Bid Schedule found in the contract documents in its entirety with the attached revised Bid Schedule dated 04/27/15. Additional or revised line items on the bid schedule are reflected by being italicized and bolded.

Per Addendum No. 2, on Sheet E2.2, a Pole Type "B" was added at Pole Location No. LPG3 & LPG4. A line item for this pole type has been added and the quantities adjusted accordingly. No other line items or quantities have changed other than those noted below.

Item 145: Quantity shall be "24" instead of "26" for "City Walk, Type C Fixture".
Item 146: Added line item for "Street/City Walk Fixture, Type B", quantity of "2".

ITEM NO. 2 – CONTRACTOR QUESTIONS:

1. Can you confirm whether the technology 6-way ductbank with innerducts will be concrete encased with conduit spacers? *Concrete encasement of the duct bank will not be required. Backfill will be as per the Utility Conduit Trench Details shown in the plans.*

2. Since this is a Federal Funded Project, are subcontractors required to have active Sam.gov accounts? *Registration with SAM.gov is required because this is a federally funded project. Registration is free and something businesses can do themselves.*

END OF ADDENDUM NO. 4

Bradley Porter

Michael Bradley Porter, P.E.
Alabama Registration No. 30442

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ADDENDUM NO. 3

Date: June 27, 2025

Project Name: Alberta Revitalization Infrastructure Project Phase 1B
for the City of Tuscaloosa

City Project No.: A12-124
WA Project Number: 12-150

This addendum is issued to modify certain items in the Bid Documents dated May 20, 2025 and any previously issued addenda. Bidders are to acknowledge receipt of this addendum on the Bid Form. All other terms and conditions of the Bid Documents and addenda remain unchanged. Said drawings, specifications and addenda are hereby amended in the following respects and shall have in full force as part of the contract.

Bidders shall acknowledge receipt of this addendum on the Bid Form.

ITEM NO. 1 – REVISED BID SCHEDULE:

Replace the original Bid Schedule found in the Contract Documents in its entirety with the attached revised Bid Schedule dated June 27, 2025. Additional or revised bid items on the bid schedule are called out by being italicized and bolded.

Per Addendum No. 2 on Sheet E2.2, a new Type "F" was added at Pole Location No. UP03 & UP04. An line item for this pole type has been added and the quantities adjusted accordingly. No other locations or descriptions have changed other than those noted below.

Item 1550 Quantity shall be "24" instead of "22" for Utility Work, Type C Fixture
Item 1601 Added line item for "Steel Utility Pole, Type F" Quantity of "2"

ITEM NO. 2 – CONTRACTOR QUESTIONS:

1. Can you confirm whether the technology/key date/phasing interdependency will be contractually enforced with liquidated damages? Current progress of the development will be reviewed and documented as per the Utility Coordination Report. Delays shown in the plan

2. Since this is a federal funded project, a project extension is required. Should any delays beyond contractor control occur, will SAM provide an extension? This is a decision by the project Registration is pre-requisite for submitting bid. Bidders can do this themselves.

END OF ADDENDUM NO. 3

Michael Bentley Porter, P.E.
Alabama Registration No. 30047