

CITY COUNCIL AGENDA ITEM COVER MEMO

Agenda Item Number _____

Meeting Type: Regular

Meeting Date: 2/28/2013

Action Requested By:
Engineering

Agenda Item Type
Resolution

Subject Matter:

Agreement with Reed Contracting Services, Inc.

Exact Wording for the Agenda:

Resolution authorizing the Mayor to enter into an agreement with the low bidder, Reed Contracting Services, Inc., for Redstone Gateway Package I-1, Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner, Project No. 65-12-SP23

Note: If amendment, please state title and number of the original

Item to be considered for: Action

Unanimous Consent Required: No

Briefly state why the action is required; why it is recommended; what Council action will provide, allow and accomplish and; any other information that might be helpful.

This agreement is for site demolition, erosion control, clearing, grubbing, mass grading, fine grading, storm sewer, water and pond liner for the Redstone Gateway project for a total contract amount of \$1,825,598.50. Account Nos.: 05-6500-0811-5001 in the amount of \$1,493,500.00; and 05-6500-0811-1013 in the amount of \$332,098.50

Associated Cost:

Budgeted Item: Select...

MAYOR RECOMMENDS OR CONCURS: Select...

Department Head: Kathy M...

Date: 2/19/13

revised 3/12/2012

Handwritten notes:
2-18-13

ROUTING SLIP CONTRACTS AND AGREEMENTS

Originating Department: **Engineering**

Council Meeting Date: **2/28/2013**

Department Contact: **Lynn Majors**

Phone # **256-427-5201**

Contract or Agreement: **Construction Contract**

Document Name: **Redstone Gateway Pkg I-1 Project No. 65-12-SP23**

City Obligation Amount: **\$1,825,598.50**

Total Project Budget: **\$1,825,598.00**

Uncommitted Account Balance: **0**

Account Number: 05-6500-0811-5001 \$1,493,500.00 &
05-6500-0811-1013 \$ 332,098.50

Procurement Agreements

Title 39	Competitive
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Grant-Funded Agreements

<u>Not</u> Applicable	Grant Name:
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Department	Signature	Date
1) Originating	<i>Kathy Marki</i>	2/19/13
2) Legal	<i>Wynne C. Cates</i>	2/21/13
3) Finance	<i>[Signature]</i>	2/21/13
4) Originating		
5) Copy Distribution		
a. Mayor's office (1 copies)		
b. Clerk-Treasurer (Original & 2 copies)		

RESOLUTION NO. 13-

BE IT RESOLVED by the City Council of the City of Huntsville, Alabama, that the Mayor be, and is hereby authorized, to enter into a contract with the low bidder, Reed Contracting Services, Inc., in the amount of ONE MILLION EIGHT HUNDRED TWENTY-FIVE THOUSAND FIVE HUNDRED NINETY-EIGHT AND .50/100 DOLLARS (\$1,825,598.50) for Redstone Gateway Package I-1, Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner, in Huntsville, Alabama, on behalf of the City of Huntsville, a municipal corporation in the State of Alabama, which said agreement is substantially in words and figures similar to that document attached hereto and identified as "Contract between City of Huntsville and Reed Contracting Services, Inc. for Redstone Gateway Package I-1, Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner, Project No. 65-12-SP23" consisting of a total of one (1) page plus one hundred and ninety-seven (197) additional pages consisting of Attachments A-K, Supplemental Specifications, Supplement to General Requirements for Construction of Public Improvements and all Addenda, "Certification of Compliance with Title 39, Code of Alabama", and "E-Verify Statement", and the date of February 28, 2013, appearing on the margin of the first page, together with the signature of the President or President Pro Tem of the City Council, and an executed copy of said document being permanently kept on file in the Office of the City Clerk of the City of Huntsville, Alabama.

ADOPTED this the 28th day of February, 2013.

President of the City Council of
the City of Huntsville, Alabama

APPROVED this the 28th day of February, 2013.

Mayor of the City of Huntsville,
Alabama

**CONTRACT BETWEEN CITY OF HUNTSVILLE
AND
REED CONTRACTING SERVICES, INC.
FOR
REDSTONE GATEWAY PACKAGE I-1, MASS GRADING, FINE GRADING, EROSION
CONTROL, STORM, AND POND LINER
PROJECT NO. 65-12-SP23**

~~~~~  
**STATE OF ALABAMA}  
MADISON COUNTY}**

THIS CONTRACT, made and entered into this 28th day of February, 2013, between the CITY OF HUNTSVILLE, ALABAMA, a Municipal Corporation, sometimes referred to herein as City, and REED CONTRACTING SERVICES, INC., sometimes referred to herein as Contractor.

**-WITNESSETH-**

WHEREAS, the City desires to install, construct or make certain improvements known as Redstone Gateway Package I-1, Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner, Project #65-12-SP23, in the City of Huntsville, Madison County, Alabama, all in accordance with details, specifications, surveys and general requirements prepared by the City of Huntsville Urban Development Department - Engineering Division, which are on file in the Office of the City Engineer of the City of Huntsville, Alabama, all of which details, specifications, surveys and general requirements are made a part of this contract, and

NOW, THEREFORE, it is agreed that the Contractor promises and agrees to make such improvements for the party of the first part for the considerations hereinafter set out. The Contractor promises and agrees to furnish all necessary labor, materials and equipment for the doing of the same, all to be done in accordance with such details, plans, specifications and general requirements hereto attached and made a part of this contract.

FOR THE PERFORMANCE of such work, the City agrees to pay the Contractor as follows per Attachment "B".

  
\_\_\_\_\_  
Reed Contracting Services, Inc.

BY:

\_\_\_\_\_  
Tommy Battle, Mayor

ATTEST:   
\_\_\_\_\_

\_\_\_\_\_  
Charles E. Hagood  
City Clerk Treasurer

\_\_\_\_\_  
Mark Russell  
City Council President

DATE: February 28, 2013

**REDSTONE GATEWAY -PACKAGE I-LAKE F, Package I-1 Mass Grading, Fine Grading, Erosion Control,  
Storm, and Pond Liner  
PROJECT NO. 65-12-SP23**

**TABLE OF CONTENTS**

**Milestone Dates  
Bid Proposal Forms  
Schedule of Values  
Proposed Subcontractors  
DBE/MBE/WBE Participation Listing  
Notice to Contractors  
Sample Copy of Invoice  
W9-Taxpayer Form  
Report of Ownership Form  
E-Verify Notice & MOU  
General Requirements  
Special Conditions**

**ATTACHMENT A  
ATTACHMENT B  
ATTACHMENT B-B  
ATTACHMENT C  
ATTACHMENT D  
ATTACHMENT E  
ATTACHMENT F  
ATTACHMENT G  
ATTACHMENT H  
ATTACHMENT I  
ATTACHMENT J  
ATTACHMENT K**

**ATTACHMENT "A" to Proposal  
 REDSTONE GATEWAY PACKAGE I Lake F  
 PROJECT #65-12-SP23**

**Schedule Milestone Dates  
 (Calendar Days from Anticipated General Notice to Proceed Date)**

| <u>Responsibility</u> | <u>Construction Activity</u>                                                                   | <u>Days from NTP to Milestone Completion</u> |
|-----------------------|------------------------------------------------------------------------------------------------|----------------------------------------------|
| Package I-1           | Mass Grading/Pond Liner (NTP)<br>Complete Package I-1<br>Finish RG 6500 Area (per Exhibit 1.0) | TBD<br>120 days**<br>40 days**               |
| Package I-2           | Hardscape/Amenities<br>Landscaping and Irrigation (NTP)<br>Complete Package I-2                | TBD<br>90 days**                             |
| Package I-3           | Electrical Distribution System Demolition<br>Complete Package I-3                              | 1/8/13<br>70 days**                          |
| Package I-4           | Concrete Box Culverts (NTP)<br>Complete Package I-4                                            | 12/17/12<br>80 days**                        |

**Legend**

**\*\* - LIQUIDATED DAMAGES WILL BE APPLIED**

**Notes:**

**1. If NTP dates are delayed through no fault of the contractor, NTP dates will be adjusted accordingly.**

ATTACHMENT "B" to PROPOSAL  
PROPOSAL FORM

PACKAGE I - 1 - Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner  
REDSTONE GATEWAY  
COH PROJECT NO. 65-12-SP23

| ITEM                                                          | DESCRIPTION                                                                                                                                                                                                                         | QTY. | UNIT | AMOUNT                 |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------------------------|
| 1                                                             | <b>Mobilization</b><br><i>(not to exceed 5% of the total base bid)</i>                                                                                                                                                              | 1    | L.S. | \$ <u>80,000.00</u>    |
| 2                                                             | <b>Earthwork, Erosion Control, Storm, Pond Liner, and balance of project:</b> <i>(to include all labor, materials, supervision, overhead and profit to complete work as shown and outlined in project plans and specifications)</i> | 1    | L.S. | \$ <u>1,692,318.50</u> |
| 3                                                             | <b>Total Allowances</b><br>Items A thru C (Below)                                                                                                                                                                                   | 1    | L.S. | \$ <u>53,280.00</u>    |
| FOR THE TOTAL BASE BID LUMP SUM PRICE OF<br>(ITEMS 1 thru 3): |                                                                                                                                                                                                                                     |      |      | \$ <u>1,825,598.50</u> |

**ATTACHMENT "B" to PROPOSAL  
PROPOSAL FORM**

**PACKAGE I - 1 - Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner  
REDSTONE GATEWAY  
COH PROJECT NO. 65-12-SP23**

**ALLOWANCES TO BE INCLUDED IN BASE BID TOTAL**

*(Note: Allowances will be used on an as-needed basis. Upon Project Completion, Any Balance will be subtracted from Contract.  
ALL VOLUME MEASUREMENTS TO BE "BANK YARDS" - (IN PLACE MEASUREMENT)*

| ITEM                                        | DESCRIPTION                                                                                                                                                                                                     | QTY.   | UNIT | UNIT PRICE | TOTAL AMOUNT        |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|------------|---------------------|
| A                                           | <b>Remove Petroleum Contaminated Soils Allowance:</b><br>Excavate contaminated soils at old substation, as identified by RSA representative, and haul to RSA soils recycling area within 5 miles of the project | 1,800  | CY   | \$ 10.60   | \$ 15,900.00        |
| B                                           | <b>Temporary Road Allowance:</b><br>Furnish and install, maintain, and remove temporary road with Fabric and 8" of #57 Stone for Additive Change Order                                                          | 3,000  | SY   | \$ 12.41   | \$ 37,230.00        |
| C                                           | <b>Unsuitable Material Below Cut Line Allowance:</b> Undercut and waste <del>on-site</del> and replace with onsite material for Additive Change Order                                                           | 15,000 | CY   | \$ 0.01    | \$ 150.00           |
| <b>Total Allowances for Items A thru C:</b> |                                                                                                                                                                                                                 |        |      |            | <b>\$ 53,280.00</b> |

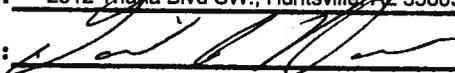
**OPTION 1**

|     |                                                                                                   |              |      |             |
|-----|---------------------------------------------------------------------------------------------------|--------------|------|-------------|
| 1-1 | Furnish and install 6" thick 1.5" Crusher Run Graded Aggregate at end of Rail Spur per Sheet C8.0 | ADD / DEDUCT | L.S. | \$ 6,261.95 |
|-----|---------------------------------------------------------------------------------------------------|--------------|------|-------------|

The Apparent Low Bidder(s) will be required to submit, within Two (2) business day after bid opening, a detailed "balanced" breakdown of Bid Items # 1-3 indicating quantities and unit prices. Such unit prices will be the basis for additive and deductive change orders.

\*Legal Name of Bidder (Company) : Reed Contracting Services, Inc.

Mailing Address : 2512 Triana Blvd SW., Huntsville, AL 35805

By (authorized signature) : 

Name (Typed) : David L. Harris

Title : Vice President

Date : February 14, 2013

*\* If other than the individual proprietor, a named member of the Partnership, the President, Vice-President or Secretary of the Corporation, attach written authority to bind the Bidder. Any modification shall be over the initials of the person signing the bid.*

**PROPOSAL**

**TO: THE CITY OF HUNTSVILLE**

**Public Services Building  
320 Fountain Circle  
Huntsville, Alabama**

**PROPOSAL OF** Reed Contracting Services, Inc.  
**(NAME)**  
2512 Triana Blvd, SW, Huntsville, AL 35805  
**(ADDRESS)**

**TO MAKE CERTAIN IMPROVEMENTS ENTITLED:**

**REDSTONE GATEWAY PACKAGE I Lake F  
PROJECT #65-12-SP23**

**FOR THE CITY OF HUNTSVILLE, ALABAMA.**

**GENTLEMEN:**

The undersigned bidder has carefully examined the drawings or plans, bid documents, the specifications, the general requirements, the supplement to general requirements, the general terms and conditions, this proposal, the agreement, together with any addenda thereto, and agrees to furnish and deliver all the materials, and to do and perform all the work and labor required to be furnished and delivered, done and performed in and about the improvements as described above and in accordance with certain specifications prepared and approved by the OWNER (City of Huntsville, Alabama). It is **MANDATORY** that receipt of each and all addenda be acknowledged in writing by the undersigned bidder, either on page 2 of the Proposal or on the outside of the envelope. Failure to acknowledge receipt of all addenda in writing shall result in the rejection of the bid.

The undersigned bidder understands that when unit prices are called for, the quantities shown herein are approximate only and are subject to increase or decrease, and offers to do the work whether the quantities are increased, or decreased, at the unit prices stated on the proposal form. The undersigned bidder also understands that when lump sum bids are called for, he will be required to furnish all equipment, labor, material and other items or cost to construct a complete facility. The undersigned bidder further understands that any deletions or additions designated on the outside of the bid envelope, must indicate the particular bid item relative to the deletion or addition, even if the deletion or addition references to deduct or add to the Total Base Bid.

Certificates of Insurance are required naming the City as the Certificate Holder. Also, the name of the project and project number should be included on the certificate. The Certificates should reflect the insurance coverage required herein. In addition, a copy of the policy may be requested upon award. The Certificates are to be signed by a person authorized by the insurer to bind coverage on its behalf and must indicate coverage will not be canceled or non-renewed except after thirty (30) days prior written notice to the City at the following address: City of Huntsville, P.O. Box 308, Huntsville, Alabama 35804 ATTN Penny Kelly.

The undersigned bidder understands that the Contract Time and required milestones for completion of all work is listed on Attachment "A", Schedule Milestone Dates.

**THE UNDERSIGNED BIDDER ALSO AGREES AS FOLLOWS:**

All bonds must be approved by the Mayor and the Clerk-Treasurer of the City of Huntsville. Within fifteen (15) days after the date of acceptance of this proposal by City Council action, the contractor shall execute the contract and furnish to the OWNER a payment (labor and material) bond and a performance bond, each in the amount of 100% of the contract amount. A notice to proceed will not be issued until the contractor has furnished the required bonds and insurance. No contract extension will be allowed for delays in the issuance of the notice to proceed that are a result of the contractor failing to submit the required items within the 15 days.

**REDSTONE GATEWAY PACKAGE I Lake F  
PROJECT #65-12-SP23**

It is further understood and agreed that the Contractor shall commence work to be performed under this contract within fifteen (15) days from the date of notice to proceed, unless otherwise instructed in writing by the OWNER. All work shall be carried on continuously to completion.

Accompanying this proposal is a certified check or bid bond payable to the City of Huntsville, Alabama in the amount of not less than five percent (5%) of the total amount shown on the proposal form(s) for the base bid(s) but not exceeding \$10,000.00. The check or bid bond shall be forfeited as liquidated damages if, in the event that his proposal is accepted, the undersigned shall fail to execute the contract and furnish a satisfactory contract bond under the conditions and within the time specified in this proposal. Otherwise, said certified check or bid bond will be returned to the undersigned.

DATED: February 14, 20 13.

(IF AN INDIVIDUAL, PARTNERSHIP, OR NON-INCORPORATED ORGANIZATION)  
SIGNATURE OF BIDDER \_\_\_\_\_

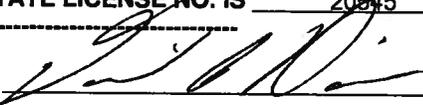
BY \_\_\_\_\_

ADDRESS OF BIDDER \_\_\_\_\_

NAMES AND ADDRESSES OF MEMBERS OF THE FIRM:

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

OUR CONTRACTOR'S STATE LICENSE NO. IS 20545

(IF A CORPORATION)  
SIGNATURE OF BIDDER 

BY David L. Harris, Vice President

BUSINESS ADDRESS 2512 Triana Blvd SW, Huntsville, AL 35805

INCORPORATED UNDER THE LAWS OF THE STATE OF Alabama

NAMES PRESIDENT Michael Reed

OF SECRETARY David L. Harris

OFFICERS TREASURER Charles C. Lovoy

**MANDATORY ACKNOWLEDGEMENT OF ADDENDA:** Addenda will only be faxed to those bidders who attend and have signed in at the pre-bid meeting. It is the responsibility of all bidders to refer to the City of Huntsville website for any updates. Acknowledge all addenda received below and considered in this bid by listing by addenda number below:

No. 1 - 2/4/2013    No. 2 - 2/4/2013    No. 3 - 2/6/2013    No. 4 - 2/8/2013    No. 5 - 2/12/13    \_\_\_\_\_

Attach the appropriate Proposal Form for your Package(s) to this Proposal.  
Proposal Form for Package I-1 Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner.  
Proposal Form for Package I-2 Hardscape/Amenities, Landscape, and Irrigation.

The Apparent Low Bidder(s) will be required to submit, within Two (2) business day after bid opening, a detailed "balanced" breakdown of Bid Items # 1-2 and any accepted Options indicating quantities and unit prices. Such unit prices will be the basis for additive and deductive change orders.

**\*Legal Name of Bidder (Company) :** Reed Contracting Services, Inc.

**Mailing Address :** 2512 Triana Blvd SW, Huntsville, AL 35805

**By (authorized signature) :** N/A - no bid

**Name (Typed) :** David L. Harris

**Title :** Vice President

**Date :** February 14, 2013

*\* If other than the individual proprietor, a named member of the Partnership, the President, Vice-President or Secretary of the Corporation, attach written authority to bind the Bidder. Any modification shall be over the initials of the person signing the bid.*

|    |                                  |       |    |             |              |
|----|----------------------------------|-------|----|-------------|--------------|
| 1  | Mobilization                     | 1     | LS | \$80,000.00 | \$80,000.00  |
| 2  | Sub station footer demolition    | 1     | LS | \$38,297.01 | \$38,297.01  |
| 3  | East Spur Work                   | 1     | LS | \$32,789.27 | \$32,789.27  |
| 4  | West Spur Work                   | 1     | LS | \$12,119.43 | \$12,119.43  |
| 5  | Engineering                      | 1     | LS | \$31,319.51 | \$31,319.51  |
| 6  | Wattle inlet Protection          | 14    | EA | \$191.45    | \$2,680.30   |
| 7  | Rip Rap Check Dams               | 105   | TN | \$27.25     | \$2,861.25   |
| 8  | Wattle Check Dams                | 28    | EA | \$230.14    | \$6,443.92   |
| 9  | Construction Entrance            | 1     | EA | \$1,920.91  | \$1,920.91   |
| 10 | Rip Rap Outlet Protection        | 10    | EA | \$518.30    | \$5,183.00   |
| 11 | Diversion ditch                  | 1     | LS | \$2,571.86  | \$2,571.86   |
| 12 | Temp seeding                     | 33    | AC | \$1,057.03  | \$34,881.99  |
| 13 | 54" RCP Removal                  | 110   | LF | \$19.62     | \$2,158.20   |
| 14 | 6' x 4' box culvert removal      | 90    | LF | \$93.21     | \$8,388.90   |
| 15 | Remove culvert wing walls        | 1     | LS | \$1,732.97  | \$1,732.97   |
| 16 | Remove outlet control structure  | 1     | LS | \$2,176.68  | \$2,176.68   |
| 17 | Remove 54" Headwall              | 1     | EA | \$635.08    | \$635.08     |
| 18 | Strip topsoil 4" thick           | 16704 | CY | \$5.57      | \$93,041.28  |
| 19 | Excavate and stockpile for liner | 12508 | CY | \$5.57      | \$69,669.56  |
| 20 | Cut to fill excavation           | 98831 | CY | \$5.57      | \$550,488.67 |
| 21 | Borrow from on site              | 45799 | CY | \$5.57      | \$255,100.43 |
| 22 | install pond liner               | 1     | LS | \$56,833.87 | \$56,833.87  |
| 23 | Topsoil respread                 | 17492 | CY | \$5.57      | \$97,430.44  |
| 24 | 18" RCP                          | 272   | LF | \$39.98     | \$10,874.56  |
| 25 | 30" RCP                          | 228   | LF | \$67.43     | \$15,374.04  |
| 26 | 36" RCP                          | 152   | LF | \$79.45     | \$12,076.40  |

|    |                                          |       |    |            |                       |
|----|------------------------------------------|-------|----|------------|-----------------------|
| 27 | 42" RCP                                  | 96    | LF | \$102.01   | \$9,792.96            |
| 28 | 48" RCP                                  | 360   | LF | \$119.87   | \$43,153.20           |
| 29 | 54" RCP                                  | 152   | LF | \$152.09   | \$23,117.68           |
| 30 | Box Culvert Engineering                  | 1     | LS | \$2,420.42 | \$2,420.42            |
| 31 | Box Cuvlert F-line 10 x 6                | 241   | LF | \$540.38   | \$130,231.58          |
| 32 | Drainage Structures                      | 23    | EA | \$3,135.29 | \$72,111.67           |
| 33 | 4" PVC waterline                         | 200   | LF | \$21.36    | \$4,272.00            |
| 34 | 4" Back flow preventer                   | 1     | EA | \$9,945.85 | \$9,945.85            |
| 35 | Erosion control blanket                  | 7505  | SY | \$1.20     | \$9,006.00            |
| 36 | Permanent seeding                        | 23    | AC | \$1,987.07 | \$45,702.61           |
| 37 | Allowance-Remove contaminated soils      | 1500  | CY | \$8.91     | \$13,365.00           |
| 38 | Allowance-Temp road place and remove     | 3000  | SY | \$11.76    | \$35,280.00           |
| 39 | Allowance-Unsuitable soil below cut line | 15000 | CY | \$0.01     | \$150.00              |
|    | <b>TOTAL</b>                             |       |    |            | <b>\$1,825,598.50</b> |



**ATTACHMENT "D" to PROPOSAL  
REDSTONE GATEWAY  
PACKAGE I Lake F  
PROJECT #65-12-SP23**

**DBE/MBE/WBE PARTICIPATION LISTING**

The Contractor shall engage in outreach efforts to encourage small or disadvantaged businesses (including, but not limited to, women-owned businesses, minority owned businesses, businesses owned by persons with disabilities, and other small or disadvantaged businesses) to respond to solicitations for bids as subcontractors and shall provide details of their outreach efforts in regard to their subcontractors by written reports to the City of Huntsville's Procurement Division.

| <b>DBE/MBE/WBE</b> | <b>Company</b> | <b>Scope</b> | <b>Amount % of Contract</b> |
|--------------------|----------------|--------------|-----------------------------|
| 1.) None           |                |              |                             |
|                    |                |              |                             |
|                    |                |              |                             |
|                    |                |              |                             |
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| 2.)                |                |              |                             |
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| 4.)                |                |              |                             |
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| 5.)                |                |              |                             |
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|                    |                |              |                             |
|                    |                |              |                             |

Add additional lines below or on back of this sheet as required:

**ATTACHMENT "E"**

**NOTICE TO CONTRACTORS**

January 2013

**Owner:**

**City of Huntsville, AL  
320 Fountain Circle  
Huntsville, AL 35801**

**Project Manager**

Brasfield&Gorrie, L.L.C.  
3021 7<sup>th</sup> Avenue South  
Birmingham, AL 35233  
Phone 205/328-4000 or 205/714-1322  
Fax 205/714-1399  
Contact: Matt Kelley

**Project:**

**Redstone Gateway Package I Lake F  
(Unsecure Area)**

**Bid Packages:**

**I-1 – Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner**

Brasfield&Gorrie, L.L.C., acting as agent on behalf of City of Huntsville, AL, requests bids for: **Prime Contract Package Work** referenced below in association with the construction of **Redstone Gateway Package I Lake F (Unsecure Area)**, in Huntsville, Alabama. The Prime Contract Package covered by this advertisement is below:

**This package includes, but is not limited to the following items:**

**Package I-1 - Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner** – site demolition, erosion control, clearing, grubbing, mass grading, fine grading, storm sewer, pond liner, sleeves.

**Bids will be received on behalf of the City of Huntsville, AL until 10:00 a.m. on February 5, 2013, and will thereafter be publicly opened and read aloud in the First Floor Conference Room at the City of Huntsville Public Services Building, 320 Fountain Circle, Huntsville, AL 35801. Bids must be submitted on proposal forms furnished. (Bids shall be clearly identified on the exterior of the package with the bidder's name, address, state license number, the name and project number of the package being bid, and time and place of the bid opening. Sealed bids shall be properly identified.)**

Bids may be sent by **Air Courier, Delivery or Messenger Service** or hand delivered to **Attention: Matt Kelley, City of Huntsville Engineering Department, Public Services Building, 320 Fountain Circle, Huntsville, AL 35801**, or mailed by **United States Postal Service** to **City of Huntsville Engineering Department, P.O. Box 308, Huntsville, AL 35804** provided the bid is received prior to the bid opening. Sealed bids shall be submitted in triplicate and shall be properly identified. All bids received after 10:00 a.m. on the noted bid date will be returned unopened.

A cashier's check drawn on an Alabama bank or bid bond, executed by a surety company duly authorized and qualified to make such bonds in Alabama, payable to City of Huntsville, AL in the amount of 5% of the amount of bids, but in no event more than \$10,000.00, must accompany the bidder's bid.

Construction contracts shall be awarded only to qualified contractors, licensed by the State Licensing Board for General Contractors, as required by Title 34, Chapter 8, Code of Alabama. Construction contracts in excess of \$50,000 shall be awarded only to contractors licensed as required by the 1978 Code of Alabama, Title 34, Chapter 8 as amended. Bidders must be "responsible" in accordance with criteria in the bid documents and as stipulated by Title 39-2-4(e) of the Code of Alabama.

In determining the successful bidder, the Owner will consider in addition to the bid prices, such responsibility factors as characteristics and responsibility, skill, experience, record of integrity in business, and of performance offered and past record of performance on Owner contracts on other similar projects. Any other factors not specifically mentioned or provided for herein, in addition to that of the bid price which would affect the final cost of the owner, will be taken into consideration in making award of contract. The right is reserved to reject any bid where investigation of the business and technical organization of the bidder available for the contemplated work, including financial resources, equipment, and experience on similar projects does not satisfy the Owner that such bidder is qualified to perform the work. The City Council of the City of Huntsville reserves the right to reject any and all bids and to waive informalities.

All bonds must be approved by the Mayor and the Clerk-Treasurer of the City of Huntsville. Within fifteen (15) days after the date of acceptance of this proposal by City Council action, the contractor shall execute the contract and furnish to the Owner a payment (labor and material) bond and a performance bond, each in the amount of 100% of the contract amount, as well as a Certificate of Insurance. No contract extension will be allowed for delays in the issuance of the notice to proceed that are a result of the contractor failing to submit the required items within the 15 days.

Bid documents will be made available by the Project Manager on January 21, 2013, on the City of Huntsville website. (<http://www.huntsvilleal.gov/engineering/bidlist.html>)

All requests for information concerning the bid documents must be submitted in writing to the Project Manager as noted above so the question can be addressed with the design consultant and/or Owner as required.

A **MANDATORY** Pre-bid Conference will be held on January 29, 2013, at 8:30 a.m. at the City of Huntsville Public Services Building, 1st Floor Conference Room, 320 Fountain Circle, Huntsville, AL 35801. Bidders must attend this pre-bid conference in order to be eligible to submit a bid.

Advertisement to run: January 21, 2013

**ATTACHMENT "F" (SAMPLE FORM)  
REQUEST FOR PAYMENT  
CITY OF HUNTSVILLE ENGINEERING DIVISION**

PROJECT NAME AND NUMBER:

ESTIMATE NUMBER: ONE (1) PERIOD FROM: 03/11/05 TO \_\_\_\_\_  
 CONTRACT DURATION 0 DAYS  
 START DATE: 03/11/05 END DATE: 3/11/05 TOTAL CONTRACT TIME (3) 0 DAYS

REFER TO COH SUPPLEMENT  
 TO GENERAL REQUIREMENTS:  
 CHANGE ORDERS - CHANGE  
 TO CONTRACT TIME

|      |          |            |          |                         |          |
|------|----------|------------|----------|-------------------------|----------|
| TIME | C.O. # 1 | DAYS ADDED | <u>0</u> | CONTRACT DAYS REMAINING | <u>0</u> |
| TIME | C.O. # 2 | DAYS ADDED | <u>0</u> |                         |          |

TOTAL CONTRACT AMOUNT (1) AS AWARDED \$ 200,000.00 CURRENT \$ 200,000.00

C.O. # 1 \$ \_\_\_\_\_  
 C.O. # 2 \$ \_\_\_\_\_

TOTAL AMOUNT EARNED TO DATE LESS STORED MATERIALS (2): \$ \_\_\_\_\_

MATERIAL STORED (INVOICE ATTACHED) \$ \_\_\_\_\_

RETAINAGE (5%) OF 50% OF CONTRACT Amount is in accordance with ALDOT and COH specifications and is based on the contract amount before change orders. \$ \_\_\_\_\_

AMOUNT EARNED AFTER RETAINAGE \$ \_\_\_\_\_

LIQUIDATED DAMAGES PER DAY 300

LIQUIDATED DAMAGES ASSESSED TO DATE:

**FOR QUESTIONS RELATED TO PAYMENT CALCULATIONS, LIQUIDATED DAMAGES, AND CHANGE ORDER REQUIREMENTS, PLEASE REFERENCE YOUR CONTRACT SUPPLEMENT TO GENERAL REQUIREMENTS SECTION, 4. CHANGE ORDERS, 12. PAYMENT, 13. LIQUIDATED DAMAGES.**

Damages, if applicable, will automatically be calculated by subtracting the contract and date from the invoice period and date and multiplying the days by the daily damages amount. Damages will automatically be deducted from amounts otherwise due.

TOTAL AMOUNT PREVIOUSLY APPROVED TO DATE: \$ \_\_\_\_\_

AMOUNT DUE THIS ESTIMATE WITHOUT LIQUIDATED DAMAGES \$ \_\_\_\_\_

A: % OF TIME ELAPSED: TIME ELAPSED TO DATE \_\_\_\_\_ DAYS -  
 TOTAL CONTRACT TIME (3) 0 DAYS  
 B: PROJECT COMPLETION: TOTAL EARNED TO DATE (2) \_\_\_\_\_ - 0%  
 TOTAL CONTRACT AMOUNT 200,000.00  
 C: PROGRESS OF WORK: B - A: =

**CONTRACTORS CERTIFICATE**

I, \_\_\_\_\_, the duly qualified, acting and authorized agent for the contractor on the above project, do hereby certify that we have performed all of the work set forth in strict accordance with the plans, specifications, laws and ordinances applicable thereto and do further certify that all materials, labor, and equipment listed herein have been paid for in full as allowed on all prior estimates and if requested to do so, we will show evidence of payment for the same in writing before the final payment of this estimate. We further certify that the amount received hereunder is considered compensation and final payment in full for all work performed under the contract, including any amendments thereto and, upon payment of said sum, hereby release the Owner, its employees, agents, and representatives in accordance with said contract. We further certify that we fully guarantee all work performed hereunder for a period of twelve months from the date of payment of the final estimate (in accordance with the terms of our original contract and all amendments thereto) during which time all terms and conditions of the original contract document shall remain in full force and effect, including the insurance requirements, Hold Harmless Agreement, and Indemnifying Agreement as contained in said contract documents.

CERTIFIED FOR PAYMENT ON THIS THE \_\_\_\_\_ DAY OF \_\_\_\_\_  
 BY: \_\_\_\_\_ CONTRACTOR: \_\_\_\_\_  
 TITLE: \_\_\_\_\_  
 SIGNED: \_\_\_\_\_ WITNESS: \_\_\_\_\_  
 SIGNATURE

We have checked the quantities and extensions to this estimate, and to the best of our knowledge, the estimate is true and correct.

**APPROVED FOR PAYMENT**

BY: \_\_\_\_\_ CONSTRUCTION INSPECTOR  
 BY: \_\_\_\_\_ SHANE DAVIS, CITY ENGINEER  
 OR RON ADAMS, DEPUTY CITY ENGINEER  
 OR LYNN MAJORS, ADMINISTRATIVE OFFICER  
 BY: \_\_\_\_\_ PROJECT ENGINEER  
 IF FINAL ESTIMATE DATE WORK WAS COMPLETED: \_\_\_\_\_

**ATTACHMENT "G"**

All vendors/contractors are required to submit a Federal Tax Form W-9 to City of Huntsville at the time a contract is awarded, unless vendor/contractor is already registered and doing business with the City. No payments of invoices can be made until this W-9 Tax Form has been properly submitted. A copy of the W-9 Tax Form can be obtained at the following website: [www.irs.ustreas.gov/pub/irs-pdf/fw9.pdf](http://www.irs.ustreas.gov/pub/irs-pdf/fw9.pdf)

**CITY OF HUNTSVILLE, ALABAMA REPORT OF OWNERSHIP FORM**

**A. General Information.** Please provide the following information:

- Legal name(s) (include "doing business as", if applicable): Reed Contracting Services, Inc.
- City of Huntsville current taxpayer identification number (if available): 157-604  
 (Please note that if this number has been assigned by the City and if you are renewing your business license, the number should be listed on the renewal form.)

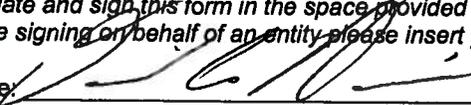
**B. Type of Ownership.** Please complete the un-shaded portions of the following chart by checking the appropriate box below and entering the appropriate Entity I.D. Number, if applicable (for an explanation of what an entity number is, please see paragraph C below):

| Type of Ownership<br>(check appropriate box)                             | Entity I. D. Number<br>& Applicable State            |
|--------------------------------------------------------------------------|------------------------------------------------------|
| <input type="checkbox"/> Individual or Sole Proprietorship               | Not Applicable                                       |
| <input type="checkbox"/> General Partnership                             | Not Applicable                                       |
| <input type="checkbox"/> Limited Partnership (LP)                        | Number & State:                                      |
| <input type="checkbox"/> Limited Liability Partnership (LLP)             | Number & State:                                      |
| <input type="checkbox"/> Limited Liability Company (LLC) (Single Member) | Number & State:                                      |
| <input type="checkbox"/> LLC (Multi-Member)                              | Number & State:                                      |
| <input checked="" type="checkbox"/> Corporation                          | Number & State:<br>157-604 Alabama                   |
| <input type="checkbox"/> Other, please explain:                          | Number & State (if a filing entity under state law): |

**C. Entity I.D. Numbers.** If an Entity I.D. Number is required and if the business entity is registered in this state, the number is available through the website of Alabama's Secretary of State at: [www.sos.state.al.us/](http://www.sos.state.al.us/), under "Government Records". If a foreign entity is not registered in this state please provide the Entity I.D. number (or other similar number by whatever named called) assigned by the state of formation along with the name of the state.

**D. Formation Documents.** Please note that, with regard to entities, the entity's formation documents, including articles or certificates of incorporation, organization, or other applicable formation documents, as recorded in the probate records of the applicable county and state of formation, **are not required unless:** (1) specifically requested by the City, or (2) an Entity I.D. Number is required and one has not been assigned or provided.

Please date and sign this form in the space provided below and either write legibly or type your name under your signature. If you are signing on behalf of an entity please insert your title as well.

Signature:  Title (if applicable): Vice President

Type or legibly write name: David L. Harris Date: February 14, 2014

Company ID Number: 109504

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 Social Security Administration (SSA), the Department of Homeland Security (DHS) and **Reed Contracting Services Inc.** (Employer) regarding the Employer's participation in the Employment Eligibility Verification Program (E-Verify). E-Verify is a program in which the employment eligibility of all newly hired employees will be confirmed after the Employment Eligibility Verification Form (Form I-9) has been completed.

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).

**ARTICLE II**

**FUNCTIONS TO BE PERFORMED**

**A. RESPONSIBILITIES OF THE SSA**

1. Upon completion of the Form I-9 by the employee and the Employer, and provided the Employer complies with the requirements of this MOU, SSA agrees to provide the Employer with available information that allows the Employer to confirm the accuracy of Social Security Numbers provided by all newly hired employees and the employment authorization of U.S. citizens.
2. The 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. The 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. The 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 the 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 establish 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 and accuracy of SSA records for both citizens and aliens within 3 Federal Government work days of the initial inquiry.

Company ID Number: 109504

5. SSA agrees to establish 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 aliens 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 THE DEPARTMENT OF HOMELAND SECURITY**

1. Upon completion of the Form I-9 by the employee and the Employer and after SSA verifies the accuracy of SSA records for aliens through E-Verify, DHS agrees to provide the Employer access to selected data from DHS's database to enable the Employer to conduct:

- Automated verification checks on newly hired alien employees by electronic means, and
- Photo verification checks (when available) on newly hired alien 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 provide to the Employer a manual (the E-Verify Manual) containing instructions 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, and 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 alien 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 alien 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 and federal criminal laws, and to ensure accurate wage reports to the SSA.

7. DHS agrees to establish 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.

Company ID Number: 109504

8. DHS agrees to establish 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.
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 E-Verify 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 established 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 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 employer will use the photocopy to verify the photo and to assist the Department 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, 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

Company ID Number: 109504

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 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 \$500 and \$1,000 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 any 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 on information provided through the confirmation system. DHS reserves the right to conduct Form I-9 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 within 3 Employer business days after each employee has been hired (but after both sections 1 and 2 of the Form I-9 have 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 Manual. 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. In all cases, the Employer must use the SSA verification procedures first, and use DHS verification procedures and photo screening tool only after the the SSA verification response has been given.
8. The Employer agrees not to use E-Verify procedures for pre-employment screening of job applicants, support for any unlawful employment practice, or any other use not authorized by this MOU. The Employer must use E-Verify for all new employees and will not verify only certain employees selectively. The Employer agrees not to use E-Verify procedures for re-verification, or for employees hired before the date this MOU is in effect. The Employer understands that if the Employer uses E-Verify procedures for any purpose other than as authorized by this MOU, the Employer may be subject to appropriate legal action and the immediate termination of its access to SSA and DHS information pursuant to this MOU.
9. The Employer agrees to follow appropriate procedures (see Article III.B. below) regarding tentative nonconfirmations, including notifying employees of the finding, 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 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 (1)) that the employee is not work authorized. The Employer understands that an initial inability of the SSA or DHS automated verification to verify work authorization, a tentative nonconfirmation, or the finding of

Company ID Number: 109504

a photo non-match, does not mean, and should not be interpreted as, an indication that the employee is not work authorized. In any of the cases listed above, the employee must be provided the opportunity to contest the finding, and if he or she does so, may not be terminated or suffer any adverse employment consequences 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, then the Employer can find the employee is not work authorized and take the appropriate action.

11. The Employer agrees to comply with section 274B of the INA 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, discharging or refusing to hire eligible employees because they appear or sound "foreign", and premature termination of employees based upon tentative nonconfirmations, and that any violation of the unfair immigration-related employment practices provisions of the INA could subject the Employer to civil penalties pursuant to section 274B of the INA and 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 1-800-255-7688 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 the SSA or DHS pursuant to E-Verify and this MOU only to confirm the employment eligibility of newly-hired employees after completion of the Form I-9. 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.

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 allow DHS and SSA, or their authorized agents or designees, to make periodic visits to the Employer for the purpose of reviewing E-Verify -related records, i.e., Forms I-9, SSA Transaction Records, and DHS verification records, which were created during the Employer's participation in the E-Verify Program. In addition, for the purpose of evaluating E-Verify, the Employer agrees to allow DHS and SSA or their authorized agents or designees, to interview it regarding its experience with E-Verify, to interview employees hired during E-Verify use concerning their experience with the pilot, and to make employment and E-Verify related records available to DHS and the SSA, or their designated agents or designees. Failure to comply with the terms of this paragraph may lead DHS to terminate the Employer's access to E-Verify.

Company ID Number: 109504

**ARTICLE III**

**REFERRAL OF INDIVIDUALS TO THE SSA AND THE DEPARTMENT OF  
HOMELAND SECURITY**

**A. REFERRAL TO THE SSA**

1. If the Employer receives a tentative nonconfirmation issued by SSA, the Employer must print the 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 tentative nonconfirmation.
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 referral letter and instruct the employee to visit an SSA office to resolve the discrepancy within 8 Federal Government work days. The Employer will make a second inquiry to the SSA database using E-Verify procedures on the date that is 10 Federal Government work days after the date of the referral in order to obtain confirmation, or final nonconfirmation, unless otherwise instructed by SSA or unless SSA determines that more than 10 days is necessary to resolve the tentative nonconfirmation..
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 THE DEPARTMENT OF HOMELAND SECURITY**

1. If the Employer receives a tentative nonconfirmation issued by DHS, the Employer must print the 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 tentative nonconfirmation.
2. If the Employer finds a photo non-match for an alien 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.
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

Company ID Number: 109504

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 the Department through its toll-free hotline 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.

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 (furnished and paid for by DHS).

7. The Employer understands that if it cannot determine whether there is a photo match/non-match, the Employer is required to forward the employee's documentation to DHS by scanning and uploading, or by sending the document as described in the preceding paragraph, and resolving the case as specified by the Immigration Services Verifier at DHS who will determine the photo match or non-match.

#### **ARTICLE IV**

##### **SERVICE PROVISIONS**

The 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 the E-Verify System, an Employer will need a personal computer with Internet access.

#### **ARTICLE V**

##### **PARTIES**

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 manual. Even

Company ID Number: 109504

without changes to E-Verify, the Department reserves the right to require employers to take mandatory refresher tutorials.

Termination by any party shall terminate the MOU as to all parties. The SSA or DHS may terminate this MOU without prior notice 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. 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.

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.

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.

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, and responses to inquiries under the Freedom of Information Act (FOIA).

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

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

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 Operations at 888-464-4218.

**Employer Reed Contracting Services Inc.**

**Paul I Moore**

\_\_\_\_\_  
Name (Please type or print)

\_\_\_\_\_  
Title

*Electronically Signed*

**03/26/2008**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Department of Homeland Security – Verification Division**

Company ID Number: 109504

**USCIS Verification Division**

Name (Please type or print)

Title

*Electronically Signed*

03/26/2008

Signature

Date



## ATTACHMENT "I"

### E-VERIFY – NOTICE

The Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No. 2011-535, Code of Alabama (1975) § 31-13-1 through 31-13-30 (also known as and hereinafter referred to as " the Alabama Immigration Act") as amended by Act No. 2012-491 on May 16, 2012 is applicable to all competitively bid contracts with the City of Huntsville. As a condition for the award of a contract and as a term and condition of the contract with the City of Huntsville, in accordance with § 31-13-9 (a) of the Alabama Immigration Act, as amended, any business entity or employer that employs one or more employees shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama.

During the performance of the contract, such business entity or employer shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations. The business entity or employer shall assure that these requirements are included in each subcontract in accordance with §31-13-9(c). Failure to comply with these requirements may result in breach of contract, termination of the contract or subcontract, and possibly suspension or revocation of business licenses and permits in accordance with §31-13-9 (e) (1) & (2).

Code of Alabama (1975) § 31-13-9 (k) requires that the following clause be included in all City of Huntsville contracts that have been competitively bid and is hereby made a part of this contract:

"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."

Contractor's E-Verify Memorandum of Understanding shall be a part of the contract bid documents and shall be submitted with the bid package.

**ATTACHMENT "J"**

# **General Requirements**

## **INSTRUCTIONS TO BIDDERS (PACKAGE I – LAKE F UNSECURE AREA)**

**This contract is to be bid on a lump sum amount basis and all bidders shall include in their bids, as a minimum, but not necessarily limit their bids to, the following items:**

### **Instructions common to all package contract scopes:**

- NPDES/ADEM permits have been obtained and are held by L.W. Redstone (Developer).
- Associated NPDES/ADEM monitoring and formal reporting will be provided by City of Huntsville Project Manager or Owner.
- Contractor is responsible for all required daily reports/own daily monitoring and will be responsible for any fines and/or remedies associated with any lack of compliance if such occurs for own scope.
- All erosion control installation as referenced and/or defined in the project specifications and as shown on drawings including maintenance and upkeep until own contract has been completed, accepted, and approved by Owner (Including sediment removal/de-mucking as required).
- Protection of all trees and existing utilities and/or utility poles to remain.
- Removal of all erosion control devices installed for own scope of work upon stabilization of site and acceptance by Owner.
- Security clearance procedures as required for own staff (coordinated through Brasfield and Gorrie).
- Drawings and specifications reproduction costs as needed.
- Review of project schedule and compliance with all milestone dates as shown in bid documents.
- Layout of work/construction staking for own scope.
- “Red-line” as-builts as defined in the bid documents.
- Highlight work progress “daily” on City of Huntsville (COH) Project Manager’s or Owner’s drawings kept on-site in jobsite trailer and submit “Daily Reports”.
- Final surveys and certified as-builts will be provided by “others”.
- Traffic control and clean-up associated with own scope including all roadways and parking areas (daily cleaning as minimum).
- Trailers, utility hook ups and associated utility costs for own scope as required.
- Telephones, portable toilets, temporary/permanent power, drinking water, ice, cups, and trash dumpsters as needed for own scope.
- Construction water as needed for own scope.
- Unloading and hoisting of own materials for own scope.
- Performance and payment bonds.
- Security of own facilities, equipment, personnel, materials, etc.
- Repairs, cleaning, and replacement of erosion control devices damaged by self and responsibility for associated fines and remedies.
- Temporary seeding or erosion repairs as required for own scope.
- Maintenance and removal of any erosion control or temporary construction items (by the contractor that installed them) once they are established or no longer required.
- Demolition as required for own scope.
- Lighting and other means necessary for night work if required.
- Coordination with the work of ALL other packages and any work “by others” (including future packages).
- Access and maintenance to own work areas.

- Dewatering for own scope.
- All labor, materials, equipment, taxes, insurances, supervision, and any other items necessary for execution and timely completion of work for own scope.
- All means and methods and costs associated with encountered rock within cut line as defined in bid documents.
- Identification, verification, and protection of utilities passing through site and ensure that they remain in service at all times or until new utilities are complete and immediate repair if damaged.
- Safely work around/under all existing overhead utility lines and utility poles and coordination with Huntsville Utilities, TVA, and Redstone Arsenal as required. Note there are 161KV lines near the site.
- Maintenance and removal of any erosion control devices installed for own scope.
- Avoid existing electrical substation(s) area at all times.
- Pricing breakouts/option pricing as required by COH Project Manager or Owner.
- In order to establish additive/deductive unit prices for potential scope changes through duration of project, apparent low bidder(s) will be required to submit a complete schedule of values (with quantities and associated unit prices) within two (2) business days of public bid opening that totals up to the lump sum price that was publicly submitted. An “unbalanced” schedule of values will be considered non-responsive and subject to rejection at the Owner’s discretion.
- All permits, licenses, right-of-way, and associated costs.
- All notifications, inspections, testing, and certifications, as required, for your scope unless specifically specified as being provided “by others”.
- Soils compaction, asphalt, and concrete testing are by Owner.
- Verification and acceptance of project schedule milestone dates in Attachment “A” to Proposal.
- Avoid traffic impacts to existing office buildings, visitor center, and access drives and/or parking areas.
- All safety requirements/plans/meetings associated with own scope of work in accordance with OSHA as a minimum.
- All General and Special Conditions set forth in the Bid Documents.
- All requirements outlined in the Notice to Contractors.
- Repair to any existing items/construction if damaged during the installation of your package.
- Protection of your scope of work through completion and acceptance by Owner.
- Immediate replacement of new construction or existing items if damaged during construction for your scope of work.
- All soil volume measurements shall be bank yards (in place compacted volume).
- Read all other bid packages, instructions to bidders, and scope definitions for this package to ensure proper coordination of your scope.
- Package 1A drawings, specifications, and instructions to bidders (previously bid and awarded: 1A-1 Fence Relocation; 1A-2 Mass Grading; Critical Pad Delivery, Preliminary Storm Sewer, and Railroad Spur Demolition; and 1A-3 Intersection Modifications) will be available at the following website for your information while bidding Package I Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
- Package 1A-5 drawings, specifications, and instructions to bidders (previously bid and awarded: 1A-5 Topsoil Removal) will be available at the following website for your information while bidding Package I Lake F for coordination as required:

- <http://www.huntsvilleal.gov/engineering/bidlist.html> and  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
- Package 1B drawings, specifications, and instructions to bidders (previously bid and awarded: 1B-1 Fine Grading, Erosion Control, Storm, Curb, and Paving; 1B-2 Water System; and 1B-3 Primary Communication and Primary Electrical Package) will be available at the following website for your information while bidding Package I Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
  - Package 1B-5 drawings, specifications, and instructions to bidders (previously bid and awarded: 1B-5 Gravity Sanitary Sewer) will be available at the following website for your information while bidding Package I Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>  
 Package 1D-drawings, specifications, and instructions to bidders (previously bid and awarded: 1D Rail Spur Installation/Relocation) will be available at the following websites for your information while bidding Package I Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
  - Package 1G-drawings, specifications, and instructions to bidders (previously bid and awarded: 1G Landscape, Irrigation, and Hardscape) will be available at the following websites for your information while bidding Package I Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/bidlist.html> and  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
  - Package 1F-drawings, specifications, and instructions to bidders (previously bid and awarded: 1F-1 Mass Grading, Critical Pad Delivery, Fine Grading, Erosion Control, Storm, Curb, and Paving) will be available at the following websites for your information while bidding Package I Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/bidlist.html> and  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
  - Package 1F-2, 1F-3, and 1F-4 drawings, specifications, and instructions to bidders (previously bid and awarded: 1F-2 Water System, 1F-3 Primary Communication and Primary Electrical, and 1F-4 Landscaping, Irrigation, and Hardscape) will be available at the following websites for your information while bidding Package I Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/bidlist.html> and  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
  - Package H-drawings, specifications, and instructions to bidders (previously bid and awarded: H Monumental Architectural Signage) will be available at the following websites for your information while bidding Package I Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/bidlist.html> and  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
  - Package I-3 & I-4 drawings, specifications, and instructions to bidders (previously bid and awarded: I-3 Electrical Distribution System Demolition and I-4 Concrete Box Culverts) will be available at the following websites for your information while bidding Package I-Lake F for coordination as required:  
<http://www.huntsvilleal.gov/engineering/bidlist.html> and  
<http://www.huntsvilleal.gov/engineering/archivedplans.php#r>
  - Read all responses to questions during bid process.

- Cooperation/coordination with Owner and Owner's agents (to include) the Geotechnical engineer, project engineer, and COH project manager or Owner.
- Coordination with Huntsville Utilities, TVA, and or their contractors as required.
- Review/Coordinate with all Contractors.

**Work By Others (either separate contract or by utility companies)**

- Packages: 1A-1 Fence Relocation; 1A-2 Mass Grading, Critical Pad Delivery, Preliminary Storm Sewer, and Railroad Spur Demolition (Entire Unsecure Phase 1); and 1A-3 Intersection Modifications.
- Package 1A-5 Topsoil Removal for Package 1A only.
- Packages: 1B-1 Fine Grading, Erosion Control, Storm, Curb, and Paving; 1B-2 Water System; and 1B-3 Primary Communication and Primary Electrical Package.
- Package: 1B-5 Gravity Sanitary Sewer.
- Package: 1D – Rail Spur Installation/Relocation.
- Package 1G – Landscaping, Irrigation, and Hardscape.
- Package 1F-1 Mass Grading, Critical Pad Delivery, Fine Grading, Erosion Control, Storm, Curb, and Paving.
- Package 1F-2 Water System, 1F-3 Primary Communication and Primary Electrical, and 1F-4 Landscaping, Irrigation, and Hardscape
- Package H Monumental Architectural Signage
- Geotechnical testing.
- Concrete and asphalt sampling and construction testing.
- Certified “as-built” drawings. (Contractor has “red line” as-built responsibility.)
- TVA primary power distribution.
- Gas installation.
- Project benchmarks, building corner layout, and building pad certification.
- Sewer Impact Fees.
- 639 Plow Zone Area testing (coordination may be required).
- Sanitary force main and pump station installation.
- Building construction.

**Package I-1: Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner.**

***This contract is to be bid on a lump sum amount basis and all bidders shall include in their bids, as a minimum, but not necessarily limit their bids to, the following items:***

- Redstone Arsenal Security Clearance procedures are required for this package of work. Base security rules/regulations will be in effect due to concurrent jurisdiction.
- Coordination with Redstone Arsenal and assurance that proper security is maintained at all times including all responsibility for any fines, penalties and /or
- imprisonment for improper coordination or not complying with Redstone Arsenal security procedures/direction.
- Installation of temporary and/or non-secure fencing if required.
- Removal of existing fences as shown on the project plans in accordance with Redstone Arsenal security procedures/requirements and proper storage on-site at an Owner specified location.
- Replacement of any removed and/or damaged fence and responsibility of associated base security requirements.
- Demolition of existing storm and sloped paved headwall as shown, note demolition of culverts by Package I-4.
- Demolition of existing outfall structure and proper removal off-site.

- Demolition of Substation foundations and proper off-site removal as required.
- Excavate petroleum contaminated soils at old substation, as identified by RSA representative, and haul to RSA soils recycling area within 5 miles of the project.
- Mass/Fine Grading +/- 0.10' of finish grades per grading plans as defined in the project specifications. Verification of finish grade by COH Project Manager or Owner (one-time only). Any additional re-verification/survey cost will be at contractor's expense.
- Installation of pond liner mock-up.
- Compaction requirements as defined in the contract documents.
- All demolition and proper off-site removal as required for own scope.
- Installation, maintenance, and removal (if required) of gravel construction entrance and construction access drives as needed for own scope.
- Relocate, remove, or abandon existing utilities as required for own scope.
- All proof rolling, visual testing, test pits, or excavation as required by the geotechnical engineer. (This includes excavation for proctor samples).
- Clear, grub, grind, and remove off-site as needed for own scope.
- Stripping, proper stockpiling, and re-spreading (min. 4" thick) of topsoil for all areas with exception of designated building pads and infrastructure boulevards/roadways as shown on project plans.
- Off-site removal of any excess topsoil.
- All organic material to be removed and replaced as part of unclassified excavation regardless of defined cut line.
- Work with Owner to balance site throughout the construction process (Site design is intended to be a balanced site). In addition, utility spoils to be incorporated in overall cut/fill requirements.
- Separating, sorting, staging, and/or proper stockpiling of material based on constructability requirements as defined in project documents or as per direction of on-site geotechnical engineer (ex. stockpile and/or separate high CH material for use as clay liner in the lake or ponds).
- Any material that is deemed "unsuitable" by the geotechnical engineer within the project "cut line" (as defined per plans/specifications) shall be removed offsite and replaced with structural fill from a designated on-site location at the contractors expense.
- Any material deemed "unsuitable" by the geotechnical engineer below the designated "cut line" (defined subgrade per specifications) will be removed offsite and replaced. Payment will utilize included unit price allowance provided on proposal form.
- Any material deemed "unsuitable" by the geotechnical engineer that has become unsuitable due to improper erosion control, dewatering or construction methods shall be removed and properly replaced with structural material at no additional cost to the Owner.
- Should material having high moisture content be deemed as "suitable" by the geotechnical engineer within the defined "cut line", the prime contractor will be required to moisture condition/lime stabilize this material at no additional cost to the Owner. (The geotechnical report indicates "the existing moisture content of the soils range from 22% to 37%. The optimum moisture content determined for the two proctor tests were 21% and 23%, indicating that the in-place soils are currently above the optimum moisture content.")
- Backfill 75' of exposed culverts at future lake installed by Package I-4 and installation of all anti-seep collars.

- Storm sewer system including lines B, D, E, F, G, H, K, L, M, and N as well as structure # IP, as shown.
- Water system as shown.
- Proper drainage and/or associated dewatering of site throughout construction.
- Install and maintain all-weather access roads and laydown areas as shown on the drawings and as needed for own scope.
- Coordination with other contractors and overall project schedule with regards to open ditches, laybacks, and timing of work by others.
- Custom manhole covers per project specifications.
- Rock removal and placement as required to “cut line” as defined in the bid documents.
- Finish grading and seeding per ALDOT Specifications on all disturbed areas as required.
- Removal and proper off-site disposal of demolition for own scope of work.

**Package I-2: Hardscape/Amenities, Landscaping & Irrigation. This contract is to be bid on a lump sum amount basis and all bidders shall include in their bids, as a minimum, but not necessarily limit their bids to, the following items:)**

- Irrigation sleeves.
- Landscaping, irrigation, and hardscape.
- Unless Package I-2 Contractor identifies specific deficiencies at the time of approval and verification by COH Project Manager or Owner prior to work turnover, Package I-2 Contractor is deemed to have accepted material and final grades installed by previous Contractors.
- All landscape boulders and landscape berms.
- Amenities including benches and trash receptacles.
- Fountains.
- Utilization of on-site topsoil stockpiles for mounding as required for own scope.
- Screening of topsoil (from on-site existing stockpile) as needed.
- All sodded areas to receive 4” topsoil.
- All plant beds to receive 6” topsoil.
- Concrete sidewalks, handicap ramps, flagstone, stonework, and associated saw cutting as required.
- Ornamental grasses, sod, shrubs, plants, ground cover, and tree installation.
- Earth/topsoil mounding at sidewalks.
- Establishment and maintenance until completion and acceptance of entire scope by Owner.
- Landscape Warranty per project plans and specs (minimum one (1) year).
- Irrigation System Warranty per project plans and specs (minimum one (1) year).
- All irrigation sleeves, main lines, heads, drip lines, controllers, valves, taps, meters, etc. required to complete system installation.
- Primary electrical, secondary electrical, and power distribution as required for power to irrigation equipment and fountains as required.
- Site Lighting conduit and pull boxes for pedestrian lighting.
- Temporary power as required to provide irrigation during construction.
- Mulching and edging in and around landscape beds.
- Temporary utility installation, utility usage fees, and all maintenance as required for own scope until completion and final acceptance of own scope by Owner.

**Package I-3: Electrical Distribution System Demolition. This contract is to be bid on a lump sum amount basis and all bidders shall include in their bids, as a minimum, but not necessarily limit their bids to, the following items: (Note Package I-3 has been previously bid and awarded.)**

- Erosion Control for own scope.
- Installation, maintenance, and removal (if required) of gravel construction entrance and construction access drives as needed for own scope.
- Relocate, remove, or abandon existing utilities as required for own scope.
- Demolition and proper off-site removal of substation, electrical distribution system, power poles, and overhead lines.
- Demolition of existing Substation security fences.
- Include any salvage value of substation, existing poles, and overhead lines in bid.
- Include any salvage value for the copper grounding mat under the three stations in bid. The copper grounding mats are made of 5/8" welded copper and the grid is installed on 8' centers at minimum. It should be noted that the grid in some areas may be installed on 4' centers but the exact area/location is not known. The grid is installed approximately 18" to 24" deep.
- Note #78 stone or smaller should be used to backfill the utility pole holes and the hole should be capped with 4" inches of dense grade base and 4" of topsoil.
- Note turnover of Owner retain concrete poles, and overhead copper lines to be included in Option 3-1. Concrete poles and copper lines to be stored onsite at area designated by Owner.
- Note turnover of Owner retain requested substation equipment to be included in Option 3-2.
- Note demolition of substation foundations and proper off-site removal as required by Package I-1 contractor to be performed after this package is complete.

**Package I-4: Concrete Box Culverts. This contract is to be bid on a lump sum amount basis and all bidders shall include in their bids, as a minimum, but not necessarily limit their bids to, the following items: (Note Package I-4 has been previously bid and awarded.)**

- Erosion Control for own scope.
- Installation, maintenance, and removal (if required) of gravel construction entrance and construction access drives as needed for own scope.
- Relocate, remove, or abandon existing utilities as required for own scope.
- Demolition of existing culverts as required to tie-in new culverts and proper removal off-site.
- Excavation per OSHA standards and backfill to within 75' of future lake.
- Please note where the box culvert enters the lake the crushed aggregate base should be stopped approximately 20' back from the top of the slope and the culvert bottom should be turned down 27" to create a seal per drawing details.
- Dewatering as required for own scope.
- Excess material can be stored onsite at an areas designated by the Owner.
- Topsoil should be replaced over any disturbed areas.
- All disturbed areas to be properly graded and seeded.
- Install new culverts (A, C, F, and J lines) as required.
- Install STR#1AA, Outlet Control Structure per Sheet C7.5, and STR#2J per Sheet C7.6.
- Cast-in-place and/or precast box culverts must be water tight.

- Custom manhole covers per project specifications.

# **Special Conditions**

Please note the following special provisions only apply when there is a PM under contract with the City of Huntsville. If the PM contract expires during the project the Owner will assume responsibility of any PM duties or assign the PM duties to another company.

These Special Conditions amend and supplement other provisions of the Contract Documents as indicated below:

**1. PROJECT MANAGEMENT DESIGNATION AND CONDITIONS**

1. The Owner has designated Brasfield & Gorrie, LLC as Project Manager ("PM") for the project. PM will act as Owner's agent with respect to the Owner's rights and authority under the Contract. A copy of the Project Managers contract with the City of Huntsville is available upon request. Contractor shall at all times provide first quality, new materials (unless otherwise specified in the Contract Documents) and workmanship conforming to the Contract requirements. Contractor shall at all times provide proper facilities and an opportunity for the inspection of the Work by PM, Engineer and Owner and their representatives. Contractor shall, within twenty-four (24) hours after receiving written notice from PM or Engineer, proceed to takedown and remove all portions of the Work which PM or Engineer shall have condemned as unsound, improper, or in any way failing to conform to the Contract Documents or this Contract and shall replace the same with proper and satisfactory Work and make good all work damaged or destroyed thereby. PM's failure to discover or notify Contractor of defective or nonconforming Work at the time the Work, or any portion thereof, is performed or completed shall not relieve Contractor of full responsibility for replacement of the defective or nonconforming Work and all damages resulting there from.
2. PM shall not be liable or responsible for loss or damage to the equipment, tools, facilities, or other personal property owned, rented, or used by Contractor, or anyone employed by or through Contractor, in the performance of the Work; and Contractor shall maintain such insurance and take such protective actions Contractor deems desirable with respect to such property. Contractor shall take all reasonable precautions to protect the Work from loss or damage prior to acceptance by Owner.

**2. COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION**

1. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall communicate through the Project Manager, who shall contemporaneously provide the same communications to the Engineer. Communications from the Engineer to Contractors will be through the Project Manager. Communications by and with the Engineer's consultants shall be through the Engineer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with other Contractors shall be through the Project Manager or Owner and shall be contemporaneously provided to the Engineer.

**3. SCHEDULE**

1. The Contractor shall:
  - a) Submit to the Project Manager or Owner, within ten (10) days of the date of commencement stated in the Notice to Proceed, a proposed, comprehensive, and detailed schedule for their Work which complies with the schedule milestones provided. This schedule shall be in sufficient detail for Project Manager's or Owner's use in preparing an overall progress schedule that coordinates the entire

- b) work, its several parts under the Contract and the work of the Owner and separate contractors. The exact format will
  - c) Be adjusted for each Contractor based upon such relevant factors as: duration, complexity, number of prime contracts, anticipated critical delivery items, critical project deadlines and/or milestones, etc. No individual schedule activity may have a duration longer than 10 working days.
  - d) Begin the Work promptly upon Project Manager's or Owner's order to do so.
  - e) Coordinate and perform the Work, and its several parts, diligently and promptly and in such order and sequence as Project Manager or Owner may from time to time direct and as will assure its efficient work and its several parts under the Contract.
  - d) Furnish at all times sufficient, qualified and competent forces and supervision, materials, equipment, supervision, tools and other necessary things, to achieve progress according to current project schedule
2. Without limiting the generality of the foregoing, Contractor shall:
    - a) Submit, with its proposed schedule, information showing the time required to prepare and approve shop drawings, to fabricate and deliver materials and equipment, and to install the Work.
    - b) Order (for manufacture or purchase and delivery) all materials required for performance of the Work as soon as possible in order to avoid delays caused by strikes, transportation or unavailability.
    - c) Furnish Project Manager or Owner within thirty (30) days of the Notice to Proceed a list of major materials and equipment required for the work, showing the name, address and telephone number of the supplier and the date on which such material and equipment is expected to be delivered to the Project site.
    - d) Furnish Project Manager or Owner, upon issuance, a copy of each major purchase order and subcontract (with price information deleted).
    - e) Cause a qualified supervisory representative (while Contractor has forces at the Project site and for two weeks prior thereto) to attend weekly progress meetings.
    - f) Notify Project Manager or Owner immediately by telephone and confirm in writing within seventy-two (72) hours, if Contractor finds that any item cannot be delivered or performed as required to maintain the progress schedule.
  3. Contractor also agrees to be bound by such modifications to the Project schedule as are discussed at the weekly job progress meetings and/or are contained in the minutes of those meetings unless written objection is made by Contractor within forty-eight (48) hours of the occurrence of such meeting. In the event that the Contractor falls behind the current schedule, the Contractor agrees to perform in accordance with Project Manager's or Owner's recovery schedule until such condition has been eliminated.
  4. The Contractor shall include in their bid any necessary cost for any overtime work resulting from shutdowns, limitation on work hours or other requirements of the Contract Documents. No claim for additional cost to the Owner, or extension of time for construction, will be considered for requirements included in the Contract Documents.
  5. Float within the construction schedule is not for the exclusive use or benefit of the Contractor or Owner. Rather, it is available to both parties as needed to meet contract milestones and completion dates. Therefore, no time extensions will be granted until a delay occurs which will impact the works' critical path, consumes all float time available, and extend the Work beyond the contract completion date. Furthermore, no extension of contract time will be granted for Owner delays concurrent with delays by the Contractor.

#### **4. PM SAFETY PROGRAM**

##### **1. GENERAL**

2.
  - a. Safety is a critical requirement of this contract. As such, the safe performance of work by the Contractor and its subcontractors is a contract requirement. Failure by the Contractor or its subcontractors to work safely shall be viewed as a failure to execute contract requirements.
  - b. As a specialist in its field of work, the Contractor accepts complete responsibility for performing its work safely. This includes sole responsibility for the health and safety of its employees, agents, subcontractors (and their employees) and any other person on or adjacent to the area. Contractor shall comply with all current laws, codes, ordinances, rules, regulations, standards and requirements of applicable public and private agencies and authorities ("Laws"). Contractor must take all measures and safeguards necessary to protect: (1) employees, (whether or not working for the Contractor), (2) employees and agents of Owner, the Project Manager or Owner and other Contractors, (3) members of the general public and (4) public and private property.
  - c. The Owner, its Project Manager, and the Contractor recognize that the Contractor is an independent contractor, with responsibility for its means and methods and the safety of its workers and that the Owner, or its Project Manager, are not intended to be and shall not be considered an employer of Contractor's employees. As such, it shall be Contractor's duty to monitor the performance and practices of its employees and subcontractors for safety, to insure that the practices and methods of performing the work are safe and to immediately stop any unsafe practices by its employees or its second or subsequent tier subcontractors ("subcontractors") or their employees.
  - d. Contractor accepts complete responsibility for compliance with all applicable Laws, relating to health or safety, including, but not limited to the Occupational Safety and Health Act of 1970, as amended, and the regulations and standards of the Occupational Safety and Health Administration and similar state agencies("OSHA") ("Health and Safety Laws"). In exchange for one hundred dollars (\$100.00) and other good and valuable consideration, the amount of which is included in the Price, Contractor agrees to defend, indemnify and hold harmless The Owner and its Project Manager and their officers, directors, agents and employees from and against any loss, liability, expense (including attorneys' fees), citations, assessments, fines or penalties resulting from any citation for, allegation of or violation of any Health or Safety Laws attributable in whole or part to the acts or omissions of Contractor, its subcontractors or their agents or employees.
  - e. All obligations and requirements of "Contractor" in this document also apply to Contractor's subcontractors. No person or entity performing work for or on behalf of Contractor is excluded from compliance.

END OF SPECIAL CONDITIONS

# Appendix

Download the geotechnical report from the City of Huntsville website at  
<http://www.huntsvilleal.gov/engineering/bidlist.html>

# **Supplement to General Requirements**

**SUPPLEMENT TO GENERAL REQUIREMENTS**  
**TABLE OF CONTENTS**

| SECTION                                                                                                                                                | SECTION NO. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| General                                                                                                                                                | 1           |
| Proposal Preparation                                                                                                                                   | 2           |
| Quantities                                                                                                                                             | 3           |
| Change Orders                                                                                                                                          | 4           |
| Maintain Office                                                                                                                                        | 5           |
| Subcontractors                                                                                                                                         | 6           |
| Bid Bond                                                                                                                                               | 7           |
| N/A                                                                                                                                                    | 8           |
| Liability Insurance                                                                                                                                    | 9           |
| Licenses and Classifications                                                                                                                           | 10          |
| Permits                                                                                                                                                | 11          |
| Payment                                                                                                                                                | 12          |
| Claim Compensation                                                                                                                                     | 13          |
| Examination of Plans, Specifications,<br>Special Provisions, and Site Work                                                                             | 14          |
| Inclusions to Contract                                                                                                                                 | 15          |
| Commencement of Work                                                                                                                                   | 16          |
| Contract Time                                                                                                                                          | 17          |
| Liquidated Damages                                                                                                                                     | 18          |
| Storage of Materials                                                                                                                                   | 19          |
| Traffic Flow                                                                                                                                           | 20          |
| Termination for Convenience                                                                                                                            | 21          |
| Termination for Cause                                                                                                                                  | 22          |
| Unbalanced Bids                                                                                                                                        | 23          |
| Additional Insurance Requirements                                                                                                                      | 24          |
| Domestic Preferences                                                                                                                                   | 25          |
| Time is of the Essence                                                                                                                                 | 26          |
| No Damages for Delays                                                                                                                                  | 27          |
| Contractor Responsible for Locating<br>Utilities Prior to Construction Initiation                                                                      | 28          |
| Correction to City of Huntsville's<br>Standard Specifications for the<br>Construction of Public Improvements,<br>Contract Projects, 1991-Recovery Time | 29          |
| Warranties                                                                                                                                             | 30          |
| Coordination with other Contractors                                                                                                                    | 31          |
| W-9 Taxpayer Form                                                                                                                                      | 32          |
| Final Payment                                                                                                                                          | 33          |
| Project Completion Date                                                                                                                                | 34          |
| Record Drawings                                                                                                                                        | 35          |
| Lien Waivers                                                                                                                                           | 36          |
| Lowest Responsible Bidder                                                                                                                              | 37          |
| Non-Resident Bidders                                                                                                                                   | 38          |
| Correction to Section 80.08C of The City of<br>Huntsville "Standard Specifications for<br>Construction of Public Improvements"                         | 39          |
| Correction to section 80 – Prosecution & Progress<br>80.01 subletting and contract. (a) limitations                                                    | 40          |
| Correction to Section 80 – Prosecution and<br>Progress 80.03 Progress Schedule of Oper.                                                                | 41          |
| Correction to Section 80 – Prosecution and<br>Progress 80.09(b)                                                                                        | 42          |
| Correction to Section 105 – Excavation and<br>Embankment                                                                                               | 43          |
| Correction to Section 847 – Pipe Culvert Joint<br>Sealers                                                                                              | 44          |

**TABLE OF CONTENTS  
PAGE TWO**

|                                                                                                                 |           |
|-----------------------------------------------------------------------------------------------------------------|-----------|
| <b>NPDES Construction Requirements</b>                                                                          | <b>45</b> |
| <b>DELETION of Section 50.01 – Authority of<br/>Engineer of Record</b>                                          | <b>46</b> |
| <b>Shop Drawings</b>                                                                                            | <b>47</b> |
| <b>E-Verify Statement</b>                                                                                       | <b>48</b> |
| <b>City of Huntsville Engineering Department<br/>Construction Requirements</b>                                  | <b>49</b> |
| <b>Survivability of Contract Provisions</b>                                                                     | <b>50</b> |
| <b>Surety Bonds</b>                                                                                             | <b>51</b> |
| <b>Governing Law</b>                                                                                            | <b>52</b> |
| <b>Alabama Immigration Act</b>                                                                                  | <b>53</b> |
| <b>Successors and Assigns</b>                                                                                   | <b>54</b> |
| <b>Written Notice</b>                                                                                           | <b>55</b> |
| <b>Rights and Remedies</b>                                                                                      | <b>56</b> |
| <b>Entire Agreement</b>                                                                                         | <b>57</b> |
| <b>Application of City of Huntsville Engineering<br/>of Public Works Department Standard<br/>Specifications</b> | <b>58</b> |

## SUPPLEMENT TO GENERAL REQUIREMENTS

### 1. GENERAL

The attention of all bidders is called to Code of Alabama §§ 34-8-1 and 34-8-2 (1975) AND 34-8-1, 34-8-2, 34-8-4, 34-8-6, 34-8-7, 34-8-8 AND 34-8-9 (AMENDED 1996) setting forth the definition of general contractor and the licensing procedures and requirements for state licensing. No one is entitled to bid and no contract may be awarded to anyone who does not possess a valid general contractor's license and the required classification for the municipal type work to be performed. The general contractor's State of Alabama license and classification must appear on the outside of the bid envelope along with the general contractor's name and address, project name and number and date and time of bid opening. Failure to provide this will be cause to reject the bid.

In determining the successful bidder, the Owner will consider in addition to the bid prices, such responsibility factors as characteristics and responsibility, skill, experience, record of integrity in business, and of performance offered and past record of performance on Owner contracts on other similar projects. Any other factors not specifically mentioned or provided for herein, in addition to that of the bid price which would affect the final cost to the Owner, will be taken into consideration in making award of contract. The right is reserved to reject any bid where investigation of the business and technical organization of the bidder available for the contemplated work, including financial resources, equipment, and experience on similar projects does not satisfy the Owner that such bidder is qualified to perform the work. The City Council of the City of Huntsville reserves the right to reject any and all bids and to waive informalities.

Separate sealed bids for the construction of this project shall be accompanied by Bid Bond in the amount of five percent (5%) of the amount of the bid not to exceed \$10,000.00. No bidder may withdraw his bid within ninety (90) days after the actual date of opening. These specifications, the supplemental specifications, the plans, special provisions and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions, unless obviously incorrect, shall govern over scaled dimensions. Supplemental Specifications shall govern over the Standard Specifications for Construction of Public Improvements Contract Projects. Plans shall govern over Standard Specifications for Construction of Public Improvements Contract Projects. Special Provisions shall govern over Standard Specifications for Construction of Public Improvements Contract Projects, Supplemental Specifications, and Plans. All bid openings and any scheduled pre-bid conferences are open to the public and will be held in the Public Services Conference Room on the 1st Floor at 320 Fountain Circle unless otherwise noted.

Contract Document Order of Precedence shall be as follows:

1. Addendums
2. General Requirements (Instructions to Bidders and Bid Proposal, including Attachments)
3. Supplement to General Requirements
4. Drawings
5. Supplemental Specifications
6. Special Conditions.

All references to OWNER shall mean City of Huntsville, Alabama. All references to City Engineer shall mean OWNER. All references to PROJECT MANAGER shall mean Owner's Representative or Owner.

### 2. PROPOSAL PREPARATION

(A) Proposal Form. The bidder's proposal must be submitted on the complete original proposal form furnished him by the City. Unless otherwise provided in the proposal, joint venturers may submit a proposal for a joint venture of qualified bidders on a proposal form issued to one of them, provided each venturer has taken out a proposal and provided the proposal is signed by each co-venturer.

(B) Details. On the proposal form, the bidder shall enter in numbers for the lump sum amount of the bid. All figures shall be legibly shown in ink or typed. Any interlineation, erasure or other alteration of a figure shall be initialed by the signer of the proposal. The undersigned bidder further understands that any deletions or additions designated on the outside of the bid envelope must indicate the particular bid item relative to the deletion or addition, even if the deletion or addition references to deduct or add to the Total Base Bid.

(C) Signing. The bidder's proposal must be signed with ink by the individual, by one or more members of the partnership, by one or more members or officers of each firm representing a joint venture, or by one or more officers of a corporation or by an agent of the Contractor legally qualified and acceptable to the City. If the proposal is made by an individual, his name and post office address must be shown; by a partnership, the name and post office address of each partnership member must be shown; as a joint venture, the name and post office address of each member or officer of the firms represented by the joint venture must be shown; by a corporation, the name of the corporation and the business address of its corporate officials must be shown. The proposal bid bond, if bid bond is tendered, shall be properly signed by the bidder and the surety.

(D) Irregular Proposals. Proposals will be considered irregular and may be rejected if they contain any omissions, alteration of form, additions not called for, incomplete bids (includes failure to enter a unit bid price on a bid item or, in the case of an alternate, the alternate being bid by the Contractor), interlineations, erasures or alterations not initialed by the person signing the proposal, or other irregularities of any kind. Bids that are not signed will be considered non-responsive and will be rejected. No proposal will be opened that does not contain the contractor's Alabama State license number. Proposals may be rejected at any time prior to the execution of the contract. Any bidder using the same or different names for submitting more than one proposal upon any project will be disqualified from further consideration on that project.

(E) Delivery of Proposals. Bids shall be clearly identified on the exterior of the package with the bidder's name, address, project name, project number, time and place of the bid opening, and State license number. Proposals will be received by the OWNER or his representative unless otherwise provided until the hour and date set in the notice to Contractors for the opening thereof. No proposal will be considered which has not been received prior to the hour and date set for the opening of bids. Proposals received after that time will be returned. No proposal will be opened that does not contain the contractor's Alabama State license number.

### 3. QUANTITIES

The undersigned bidder understands that when unit prices are called for, the quantities shown herein are approximate only and are subject to increase or decrease, and offers to do the work whether the quantities are increased, or decreased, at the unit prices stated in the proposal. Any substantial changes requiring an increase must be approved by change order prior to work and authorized by City Council Action. The undersigned bidder also understands that when lump sum bids are called for, he will be required to furnish all equipment, labor, material and other items or cost to construct a complete facility.

### 4. CHANGE ORDERS

#### (A) Changes in the Work

Without invalidating the agreement, the Owner may, at any time or from time to time, order additions, deletions or revisions in the work; these will be authorized by change orders. Upon receipt of a change order, the contractor will proceed with the work involved. All such work shall be executed under the applicable conditions of the contract documents. A change order signed by the contractor indicates his agreement.

The OWNER may authorize minor changes or alterations in the work not involving extra cost and not inconsistent with the overall intent of the contract documents. These may be accomplished by a field order.

Additional work performed by the contractor without authorization of a change order will not entitle him to an increase in the contract price or an extension of the contact time, except in the case of an emergency.

The Owner will execute appropriate change orders prepared by the engineer covering changes in the work to be performed and work performed in an emergency and any other claim of the contractor for a change in the contract time or the contract price which shall be approved by the OWNER.

It is the contractor's responsibility to notify his surety of any changes affecting the general scope of the work or change in the contract price and the amount of the applicable bonds shall be adjusted accordingly. The contractor will furnish proof of such adjustment to the Owner.

#### (B) Change of Contract Price.

The contract price may only be changed by a change order. Any claim for additional compensation shall be based on written notice delivered to the Project Manager or Owner within ten days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within twenty days of such occurrence unless OWNER allows an additional period of time to ascertain more accurate data. The contract price constitutes the total compensation payable to the contractor for performing the work. All duties, responsibilities and obligations assigned to or undertaken by the contractor shall be at his expense without changing the contract price. The Owner may at any time without notice to the sureties, by written order designated or indicated to be a change order, make any change in the work within the general scope of the contract, including but not limited to changes: (1) in the specifications (including drawings and designs); (2) in the method or manner of performance of the work; (3) in the Owner-furnished facilities, equipment, materials, services, or site; or (4) directing acceleration in the performance of the work. Any other written order or an oral order from the Owner which causes any such change, shall be treated as a change order under this clause, provided that the contractor gives the Owner written notice stating the date, circumstances, and source of the order and that the contractor regards the order as a change order.

**(C) Change in the Contract Time.**

The contract time may only be changed by a change order. Any claim for an extension in the contract time shall be based on written notice delivered to the project manager or Owner within ten days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within forty-five days of such occurrence unless OWNER allows an additional period of time to ascertain more accurate data. All claims for adjustment in the contract time shall be determined by OWNER if Owner and contractor cannot otherwise agree. Any change in the contract time resulting from any such claim shall be incorporated in a change order. The contract time will be extended in an amount equal to time lost due to delays beyond the control of contractor if he makes a claim as provided above. Such delays shall include, but not be restricted to, acts or neglect by any separate contractor employed by Owner, fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.

All time limits stated in the contract documents are of the essence of the agreement. The provisions shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party. No claim for delay shall be allowed because of failure to furnish drawings until two weeks after demand for such drawings and not then unless such claim be reasonable.

**(D) Time extension for abnormal weather conditions**

In order for the Owner to award a time extension for abnormal weather, the following conditions must be satisfied:

1. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.
2. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without fault or negligence of the contractor.

The following table of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) and similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractors normal progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities. The contractor's bid shall include the impact of the anticipated lost days in his quotation for the time he is to be on site.

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 11  | 8   | 6   | 4   | 4   | 5   | 6   | 4   | 4   | 3   | 4   | 8   |

Actual adverse weather delay days must prevent work on critical activities for 50% or more of the contractors scheduled work day before it is considered a weather delay day.

**5. MAINTAIN OFFICE**

The successful contractor shall establish an office in Huntsville, Alabama, with telephone service, and shall maintain close liaison with the OWNER.

## 6. SUBCONTRACTORS

The prime contractor shall be responsible for all work covered under the executed contract; therefore, this responsibility cannot be shifted by subcontracting the work to others. All subcontractors shall be approved by the OWNER. A list of all subcontractors proposed for use on the project shall be provided to the OWNER at the time that bids are received. This document will be known as ATTACHMENT "C". Lien waivers will be required from all subcontractors at the time of submittal of the final payment request.

All subcontractors must be approved in writing by Owner. If the subs listed on Attachment "C" are approved by the Owner, you will be notified in your notice to proceed. Any additional subcontractors needed during the contract period shall be approved by written letter from the Owner. If subcontractors are not approved, you will be notified prior to approval of contract by City Council. See Section 39 for Correction to City of Huntsville Standards Specifications for Construction.

## 7. BID BOND

Accompanying this proposal is a certified check or original signed, dated and sealed, bid bond in the amount of not less than five per (5%) of the total amount shown on the schedule of prices not exceeding \$10,000.00 dollars, payable to the City of Huntsville, Alabama, which is to be forfeited, as liquidated damages, if, in the event that his proposal is accepted, the undersigned shall fail to execute the contract and furnish a satisfactory contract bond under the conditions and within the time specified in this proposal; otherwise, said certified check or bid bond is to be returned to the undersigned.

## 8. N/A

## 9. LIABILITY INSURANCE (SEE ALSO ATTACHED INSURANCE FOR CONTRACTORS, WHICH IS SHOWN AS SECTION 24.)

The Contractor shall provide and maintain comprehensive general public liability insurance protecting the Contractor and the City against claims arising out of or resulting from the Contractor's operation under his contract for personal injury or property damage with minimum combined single limits of \$1,000,000, whether such operations are performed by himself or by anyone directly or indirectly employed by them. In addition, a copy of the policy may be requested upon award. Certificates of insurance acceptable to the City shall be filed with the City prior to commencement of work and said certificate shall provide that policies will not be altered or canceled until at least 30 days prior written notice has been given to the City.

The Contractor shall indemnify and hold the OWNER, its officers and employees harmless from any suits, claims, demands, damages, liabilities, costs and expenses including reasonable attorney's fees, arising out of or resulting from the performance of the work. Certificates of Insurance are required naming the City as the Certificate Holder. The Certificates should reflect the insurance coverage required herein. The Certificates are to be signed by a person authorized by the Insurer to bind coverage on its behalf and must be an original signature. Certificates signed using digital signatures will not be accepted. The Certificates must indicate coverage will not be canceled or non-renewed except after thirty (30) days prior written notice to the City at the following address: City of Huntsville, P.O. Box 308, Huntsville, Alabama 35804, Attention: Penny Kelly.

## 10. LICENSES AND CLASSIFICATIONS

In order to receive the award of this contract, the Contractor shall be required to possess a valid general contractor's license in accordance with Code of Alabama §§34-8-2 (1975) and (1996 amended) Code of Alabama as stated in Section 1 above. This general contractor's license shall be a State of Alabama general contractor's license and shall be maintained throughout the term of this contract. A valid City of Huntsville license shall also be maintained throughout the term of this contract.

The required classification for this project is stated in the Notice to Contractors also known as Attachment "E".

## 11. PERMITS

Additionally, the contractor shall be required to obtain and pay for all other federal, state or local permits, licenses, and fees which may be necessary or required in order to perform the work detailed herein. A City

of Huntsville Contractor's License must be obtained from the City of Huntsville Inspection Department at the time signatures are obtained on contracts. A copy of City of Huntsville license shall be provided to the OWNER at the time the contract is executed.

## 12. PAYMENT

The OWNER agrees to pay the contractor as follows: Once each month per project the OWNER shall make partial payment to the Contractor on the basis of duly certified and approved estimates of the work performed during the preceding month by the Contractor, less five percent (5%) of the amount of such estimate, which is to be retained by the City until all of the work has been performed. Owner reserves the right to withhold payments for, but not limited to: a) defective work not remedied or defective materials not removed from site; b) claims filed, or reasonable evidence indicating imminent filing of claims against the Contractor; c) failure of the Contractor to make payments properly to subcontractors or for material or labor; d) a reasonable doubt that the Contract can be completed for the balance then unpaid; e) damage to another Contractor; f) performance of work in violation of the terms of the Contract; g) expiration of Contract time. Liquidated damages will be deducted from all invoices when the invoice estimate period end date is later than the contract completion date. All pay requests will be submitted by hard copy and on disk. The hard copy will be printed from the disk. A sample copy of the invoice is attached as Attachment "F". The OWNER will provide the disk to the contractor. Two originals and two copies of the invoices are required before payment will be made. The disk should be submitted each month, along with the originals and copies, to the Administrative Officer in the Engineering Department. No further retainage will be held after fifty percent of the contract is complete. All payments to contractor will be made as soon as practical after the approval and finance processes have been completed. SEE SECTION 32 FOR INFORMATION ON FINAL PAYMENT.

## 13. CLAIM COMPENSATION (references from ALDOT current standard specifications):

### 1. *Compensable Items:*

The liability of the City for claims will be limited to the following specifically identified compensable items:

- a. Additional job site labor expenses and equipment.
- b. Additional costs for materials.
- c. Additional job-site overhead.
- d. An additional ten percent (10%) of the total of Subitems a, b, and c above for home office overhead and profit.

## 14. EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, and SITE WORK

Before submitting a proposal, bidders shall examine carefully the site of the proposed work, the general and local conditions, the proposal form, standard specifications, supplemental specifications, special provisions, and the bid bond form, and it is mutually agreed that the submission of a proposal shall be prima facie evidence that the bidder has made such examination and has judged for and satisfied himself as to the conditions to be encountered in performing the work, and to the requirements of plans, standard specifications, supplemental specifications, special provisions, contract, and bonds. No adjustments or compensation will be allowed for losses caused by failure to comply with this requirement. Boring logs and other records of subsurface investigations may be available for inspection by bidders. Bidders shall request such records if they are not otherwise provided with bid documents. If available, it is understood that such information was obtained and is intended for the City of Huntsville's design and estimating purposes only. It is made available to bidders that they may have access to identical subsurface information available to the City, and is not intended as a substitute for personal investigation, interpretations and judgment of the bidders. Bidders are advised that the City disclaims responsibility for any opinions, conclusions, interpretations, or deductions that may be expressed or implied in any of the information presented or made available to bidders; it being expressly understood that the making of deductions, interpretations, and conclusions from all of the accessible factual information is the bidder's sole responsibility.

The Contractor shall have a continuing duty to read, carefully study and compare each of the Contract Documents, the Shop Drawings, and the Product Data and shall give written notice to the Owner of any inconsistency, ambiguity, or error omission which the Contractor may discover with respect to these documents before proceeding with the affected work. The issuance or the express or implied approval by the Owner or the Engineer of the Contract Documents, Shop Drawings, or Product Data shall not relieve the Contractor of the continuing duties imposed hereby, nor shall any such approval be evidence of the Contractor's compliance with this Contract. The Owner has requested the Engineer to only prepare documents for the Project, including drawings and specs for the project which are accurate, adequate,

consistent, coordinated and sufficient for construction. HOWEVER, the OWNER MAKES NO REPRESENTATION OR WARRANTY OF ANY NATURE WHATSOEVER TO THE CONTRACTOR CONCERNING SUCH DOCUMENTS. By the execution hereof, the Contractor acknowledges and represents that it has received, reviewed, and carefully examined such documents, has found them to be complete, accurate, adequate, consistent, coordinated and sufficient for construction, and that the Contractor has not, does not, and will not, rely upon any representation or warranties by the Owner concerning such documents as no such representation or warranties have been or are hereby made.

**15. INCLUSIONS TO CONTRACT**

The parties further agree that the advertisement for bids, instructions to bidders, contractor's proposal, plans and specifications, general requirements, supplement to general requirements and general terms and conditions together with any addenda thereto made prior to submission of the contractor's proposal and all modifications agreed to by the parties and issued after the execution of this contract are a part of this contract as if fully set out herein.

**16. COMMENCEMENT OF WORK**

It is further understood and agreed that the Contractor shall commence work to be performed under this contract within fifteen (15) days from the date of this contract, unless otherwise instructed in writing by the OWNER. All work shall be carried on continuously to completion.

**17. CONTRACT TIME**

All work is to be completed within the allotted time of the original contract, which is stated in the bid proposal documents; unless a valid change order has been issued which alters the contract time period.

**18. LIQUIDATED DAMAGES**

It is further understood and agreed by and between the parties to this contract, that in the event the work to be performed under this contract is not completed at the expiration of the required milestone date and/or the contract time, then, and in that event, the Contractor shall pay to the City the amounts per calendar day by the schedule shown in the schedule in the City of Huntsville Standard Specifications, Section 80.11 – "Schedule of Liquidated Damages" for each day thereafter until such work is completed. The City will deduct said sum or sums from any money due the Contractor under this contract for any and all invoices submitted after the contract due date. (See Section 12.) Attachment "F" – Sample of Request for Payment with Liquidated Damages shall become a part of the contract documents. Liquidated damages will be deducted from all invoices when the invoice estimate period end date is later than the contract completion date.

**Section 80.11 – "Schedule of Liquidated Damages" has been amended as follows effective 3/7/11:**

| Original Contract Amount |                  | Liquidated Damages Daily Charge |          |
|--------------------------|------------------|---------------------------------|----------|
| More Than                | To and Including | Calendar Day or Fixed Date      | Work Day |
| \$ 0                     | \$ 100,000       | \$ 200                          | \$ 400   |
| \$ 100,000               | \$ 500,000       | \$ 550                          | \$ 1,100 |
| \$ 500,000               | \$ 1,000,000     | \$ 900                          | \$ 1,800 |
| \$ 1,000,000             | \$ 2,000,000     | \$ 1,350                        | \$ 2,700 |
| \$ 2,000,000             | .....            | \$ 1,550                        | \$ 3,100 |

When the contract time is on the calendar day or date basis, the schedule for calendar days shall be used. When the contract time is on a work day basis, the schedule for work days shall be used.

Amounts in accordance with ALDOT and COH specifications and is based on contract amount before Change Orders.

#### 19. STORAGE OF MATERIALS

The Contractor shall not permit the storage of materials on or use of any property outside the right-of-way easement or property identified as the project site.

#### 20. TRAFFIC FLOW

The Contractor shall be responsible for the uninterrupted, orderly and safe flow of traffic around, on, over or across the project site.

#### 21. TERMINATION FOR CONVENIENCE

- A. The City may for any reason whatever terminate performance under this Contract by the Contractor for convenience. The City shall give written notice of such termination to the Contractor specifying when the termination becomes effective.
- B. The Contractor shall incur no further obligations in connection with the Work and the Contractor shall stop Work when such termination becomes effective. The Contractor shall also terminate outstanding orders and subcontracts. The Contractor shall settle the liabilities and claims arising out of their termination of subcontracts and orders. The City may direct the Contractor to assign the contractor's right, title and interest under terminated orders or subcontracts to the City or its designee.
- C. The Contractor shall transfer title and deliver to the Owner such completed Work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has.
- D. (1) The Contractor shall submit a termination claim to the City specifying the amounts due because of the termination for convenience together with costs, pricing or other data required by the City. If the Contractor fails to file a termination claim within six (6) months from the effective date of termination, the Owner shall pay the Contractor, an amount derived in accordance with subparagraph (3) below.
  - (2) The City and the Contractor may agree to the compensation, if any, due to the Contractor hereunder.
  - (3) Absent agreement to the amount due to the Contractor, the City shall pay the Contractor the following amounts:
    - (a) Contract prices for labor, materials, equipment and other services accepted under this Contract.
    - (b) Reasonable costs incurred in preparing to perform and in performing the terminated portion of the Work, and in terminating the Contractor's performance, plus a fair and reasonable allowance for overhead and profit thereon (such profit shall not include anticipated profit or consequential damages); provided, however, that if it appears that the Contractor would not have profited or would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss, if any. Costs incurred in performing the terminated portion of the work must have been incurred prior to the effective date of the termination.
    - (c) Reasonable costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to Paragraph B of this clause. These costs shall not include amounts paid in accordance with other provisions hereof.

The Total sum to be paid the Contractor under this clause shall not exceed the total Contract Price, as properly adjusted, reduced by the amount of payments otherwise made, and shall in no event include duplication of payment.

## 22. TERMINATION FOR CAUSE

- A. If the Contractor persistently or repeatedly refuses or fails to prosecute the work in a timely manner, supply enough properly skilled workers, supervisory personnel or proper equipment or material, or if it fails to make prompt payment to Subcontractors or for materials or labor, 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 material provision of this Contract, then the Owner may by written notice to the Contractor, without prejudice to any other right or remedy, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment, and machinery thereon owned by the Contractor and may finish the Work by whatever methods it may deem expedient. In such case, the Contractor shall not be entitled or receive any further payment until the Work is finished.
- B. If the unpaid balance of the Contract Price exceeds the cost of finishing the work, including compensation for the additional professional services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the City. This obligation for payment shall survive the termination of the Contract.
- C. In the event the employment of the Contractor is terminated by the City for cause pursuant to Paragraph A and it is subsequently determined by a court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience and the provisions of the Termination for Convenience clause shall apply.

## 23. UNBALANCED BIDS

The City may reject a bid as nonresponsive if the prices bid are materially unbalanced between line items. A bid is materially unbalanced when it is based on prices which are significantly overstated or understated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the City even though it may be the low evaluated bid.

## 24. ADDITIONAL INSURANCE REQUIREMENTS

The Contractor shall carry insurance of the following kinds and amounts in addition to any other forms of insurance or bonds required under the terms of the contract specifications. The Contractor shall procure and maintain for the duration of the job until final acceptance by the Owner, or as later indicated, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors.

### A. MINIMUM SCOPE OF INSURANCE

#### 1. General Liability

Insurance will be written on an occurrence basis. Claims-made coverage will be accepted only on an exception basis after the Owner's approval. General Liability Coverage and Owners Contractors Protective Insurance should be written by this same insurance company.

Commercial General Liability

Products and Completed Operations  
Contractual  
Personal Injury  
Explosion, Collapse and Underground  
Broad Form Property Damage

#### 2. Professional Liability

N/A

3. Automobile Liability

Business Automobile Liability providing coverage for all owned, hired and non-owned autos. Coverage for loading and unloading shall be provided under either automobile liability or general liability policy forms.

4. Worker's Compensation Insurance

Statutory protection against bodily injury, sickness or disease or death sustained by employee in the scope of employment. Protection shall be provided by a commercial insurance company or a recognized self-insurance fund authorized before the State of Alabama Industrial Board of Relations.

5. Employers Liability Insurance

Covering common law claims of injured employees made in lieu of or in addition to a worker's compensation claim.

B. MINIMUM LIMITS OF INSURANCE

1. General Liability

Commercial General Liability on an occurrence form for bodily injury and property damage:

|             |                                           |
|-------------|-------------------------------------------|
| \$2,000,000 | General Aggregate Limit                   |
| \$2,000,000 | Products - Completed Operations Aggregate |
| \$1,000,000 | Personal and Advertising Injury           |
| \$1,000,000 | Each Occurrence                           |

2. Professional Liability

N/A

3. Automobile Liability

\$1,000,000 Combined Single Limit per accident for bodily injury and property damage.

4. Worker's Compensation

As required by the State of Alabama Statute.

5. Employers Liability

|           |                         |
|-----------|-------------------------|
| \$100,000 | Bodily Injury           |
| \$500,000 | Policy Limit by Disease |

C. OTHER INSURANCE PROVISIONS

The Owner is hereby authorized to adjust the requirements set forth in this document in the event it is determined that such adjustment is in the Owner's best interest. If the insurance requirements are not adjusted by the Owner prior to the Owner's release of specifications with regard to the project in questions, then the minimum limits shall apply.

The policies are to contain, or be endorsed to contain, the following provisions:

1. General Liability and Automobile Liability Coverages Only:

a. The Owner, its officers, employees, agents and specified volunteers are to be covered as Additional Insureds, as their interest may appear, as respects: liability arising out of activities performed by or on behalf of the contractor, architect, engineer, land surveyor or consulting firm

for products used by and completed operations of the Contractor, or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the Owner, its officers, employees, agents or specified volunteers.

b. The Contractor's insurance coverage shall be primary insurance as respects the Owner, its officers, employees, agents, and specified volunteers, as their interest may appear. Any insurance or self-insurance maintained by the Owner, its officers, officials, employees, agents or specified volunteers shall be excess of the Contractor's insurance and shall not contribute to it.

c. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

## 2. All Coverages

a. The Contractor is responsible to pay all deductibles. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the Owner. Cancellation of coverage for non-payment of premium will require ten (10) day's written notice to the Owner.

b. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Owner, its officers, employees, agents or specified volunteers.

## D. ACCEPTABILITY OF INSURERS

Insurance is to be placed with insurers with an A. M. Best's rating of no less than B + V.

## E. VERIFICATION OF COVERAGE

The Owner shall be indicated as a Certificate Holder and the Contractor shall furnish the Owner with Certificates of Insurance reflecting the coverage required by this document. The A.M. Best Rating and deductibles, if applicable, shall be indicated on the Certificate of Insurance for each insurance policy. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates are to be received and approved by the Owner before work commences. The Owner reserves the right to require complete, certified copies of all required insurance policies at any time.

## F. SUBCONTRACTOR WORKING FOR GENERAL CONTRACTOR, OR ARCHITECT, ENGINEERS, LAND SURVEYORS OR CONSULTING FIRMS WORKING FOR THE ENGINEER OF RECORD

The Contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and/or endorsements for each subcontractor. The Engineer of Record shall include all architects, engineers, land surveyors or consulting firms as insured under its policies other than professional liability, or shall furnish separate certificates and/or endorsements for each architect, engineer, land surveyor or consulting firm. Subcontractors working for the contractor or architects, engineers, land surveyors, or consulting firms working for the Engineer or Record shall be required to carry insurance.

## G. HOLD HARMLESS AGREEMENT

### 1. Other Than Professional Liability Exposures

The Contractor, architect, engineer, land surveyor or consulting firm, to the fullest extent permitted by law, shall indemnify and hold harmless the City of Huntsville, its elected and appointed officials, employees, agents and specified volunteers against all claims, damages, losses and expenses, including, but not limited to, attorney's fees, arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to personal injury, including bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including loss of use resulting therefrom and (2) is caused by any negligent act or omission of the contractor, architect, engineer, land surveyor or consulting firm, or any of their subcontractors, subconsultants, or anyone directly or indirectly employed by any of them or anyone for whose acts they are legally liable. Such obligation should not be construed to negate, abridge, or

otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this paragraph.

2. The architect, engineer, land surveyor or consulting firm agrees that as respects to negligent acts, errors, or omissions in the performance of professional services, to indemnify and hold harmless the City of Huntsville, its officers, agents, employees, and specified volunteers from and against any and all claims, demands, losses and expenses including, but not limited to attorney's fees, liability, or consequential damages of any kind or nature resulting from any such negligent acts, errors, or omissions of the architect, engineer, land surveyor or consulting firm or any of their subconsultants, or anyone directly or indirectly employed by any of them or anyone for whose acts they are legally liable.

#### 25. DOMESTIC PREFERENCES

In the performance of this contract, the Contractor shall comply with Ala Code (1975) §§ 39-3-1 through 39-3-5 in supplying steel, materials, supplies, other products, and labor. Failure to comply with these requirements shall subject the Contractor to the penalties set forth in the sections of the Alabama Code set forth above.

#### 26. TIME IS OF THE ESSENCE

Time is of the essence in the performance of this contract.

#### 27. NO DAMAGES FOR DELAYS

In the event that the Contractor is delayed in the performance of the work for the reasons set forth in §80.09 of the City of Huntsville's Standard Specifications for the construction of Public Improvements, Contract Projects, 1991, then the Contractor's recovery for such delay shall be limited to the extensions of time in contract performance in accordance with the provisions of §80.09 and in §4(c) "Changes in Contract Time" as set forth in the Request for Bids.

In such circumstances, time extensions are the sole remedy provided to the Contractor. The Contractor shall make no claim for extra compensation due to delays of the project beyond his control. Such delays may include those caused by an act of neglect on the part of the Owner or the engineer, or by an employee of either, or by any separate contractor employed by the Owner, or by any changes ordered in the work, or by labor disputes, fire, unusual delays in transportation, adverse weather condition not reasonably anticipatable, unavoidable casualties, or by delay specifically authorized by the Owner in writing pending the resolution of any disputes, or by any other cause which the Owner determines may justify delay.

#### 28. CONTRACTOR RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO CONSTRUCTION INITIATION

The Contractor's attention is specifically directed to §50.07 -Cooperation with Utilities and Non-Highway Public Facilities of the City of Huntsville's Standard Specifications for the Construction of Public Improvements, Contract Projects, 1991. In addition to the responsibilities placed on the Contractor by that clause, the Contractor shall be responsible for having existing utilities located prior to excavations. The existence and location of any underground utility pipes or structures shown on these drawings have been obtained by a search of the available records. The City assumes no responsibility as to completeness or accuracy of the depicted location on these drawings. The Contractor shall be responsible for taking precautionary measures to protect the utility lines shown and all other lines not of record or not shown on these drawings by verification of their location in the field prior to the initiation of the work.

#### 29. CORRECTION TO CITY OF HUNTSVILLE'S STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF PUBLIC IMPROVEMENTS, CONTRACT PROJECTS, 1991

§80.09 (b) 2. of the City of Huntsville's Standard Specifications for the construction of Public Improvements, Contract Projects, 1991 refers to the definition of recovery time as being set forth in Section 10.01. Inasmuch as this definition was omitted from §10.01, the following definition shall be incorporated:

Recovery Time. Recovery time is defined as the time required, after the controlling item or items of work have been substantially damaged as a result of conditions and causes beyond the control of the Contractor and not due to his negligence of fault, to restore the work to the condition existing prior to such damage so

that normal operations can be resumed on the contract pay items. Recovery time shall be the number of days required by the Contractor, working with normal forces, to restore the work as described above.

### 30. WARRANTIES

Contractor shall provide a minimum of one year warranty of all materials and services from date of final completion. Additionally, all manufacturers' warranties on materials used in providing the services shall be provided to the Owner with the final payment request. Separate warranty bonds may be required on specialty items as determined by the Owner and will be shown as a separate line item in the quantities prior to bidding.

### 31. COORDINATION WITH OTHER CONTRACTORS

It shall be the responsibility of the contractor to coordinate with other separate contractor's who may be working on the site or an adjacent site with regards to access to the site, storage of materials and working on a non-interference basis.

### 32. W-9 TAXPAYER FORM

All vendors/contractors are required to submit a Federal Tax Form W-9 to City of Huntsville at the time a contract is awarded, unless vendor/contractor is already registered and doing business with the City. No payments of invoices can be made until this W-9 Tax Form has been properly submitted. A copy of the W-9 Tax Form can be obtained at the following website: [www.irs.ustreas.gov/pub/irs-pdf/fw9.pdf](http://www.irs.ustreas.gov/pub/irs-pdf/fw9.pdf)

### 33. FINAL PAYMENT

Final payment to construction contractor will be made after contractor provides the following: advertising of completion for four (4) consecutive weeks, lien waivers have been provided from all subcontractors, Record Drawings (As-Builts) have been submitted to the OWNER by construction contractor, all property pins have been reset by a licensed land surveyor hired by the construction contractor to meet "Standards of Practice for Surveying in the State of Alabama" as required by the Alabama Board of Registration for Engineering and Land Surveyors, and all construction signs have been removed. This final payment will be retainage only. All work shall be complete prior to advertisement of completion. Advertisement of completion shall be in a Huntsville local newspaper. The final payment request of retainage only shall be submitted along with two (2) original, certified copies (with raised notary seal) of the advertisement of completion, warranties, lien waivers and Record Drawings. The advertisement of completion must read as follows:

#### LEGAL NOTICE (Header)

(company name) hereby gives Legal Notice of Completion of Contract with (project name), (project no.(s)) located in the City of Huntsville, Alabama. All claims should be filed at (company address) during this period of advertisement, i.e. June 17, 24, July 1, 8, 2011 (example of dates).

### 34. PROJECT COMPLETION DATE

The project completion date will be a date mutually agreed upon by the OWNER and Contractor. This date will be after all items have been completed. Therefore, all work will be complete before any advertisement of completion is made. The completion date will always be before the first advertisement date. This final project completion date will be the date used to determine the one year warranty for all work and materials, unless a separate warranty bond has been called for as a line item prior to bidding.

### 35. RECORD DRAWINGS

#### **POLICY FOR RECORD DRAWINGS**

The purpose of this policy is to document procedures for the preparation and delivery of Record Drawings. Record Drawings shall include all changes in the plans, including those issued as Change Orders, Plan Clarification, Addenda, Notice to Bidders, responses to Requests for Information, Jobsite Memos, and any additional details needed for the construction of the project, but not shown on the plans. After completion of all construction and before final acceptance is made, the Contractor shall submit one set of full size record drawings with dimensioned changes shown in red pencil, and one digital copy of record drawings using the criteria listed below.

**City Construction Projects:**

The Project Manager or Owner shall be responsible for field surveying upon substantial completion of construction (to be performed by a registered land surveyor in Alabama). Project Manager or Owner is responsible for providing digital record drawings showing all info specified below, as applicable. Record drawings shall be maintained by the Contractor at the work site and shall be updated based on job progress to reflect all changes. Record drawings shall be made available for review on a monthly basis at the job site. A monthly review of record drawings will be part of the monthly monetary progress review. Progress payments may be withheld if the Record Drawings are not kept up-to-date. A late review could result in a delay of payment.

**Format Requirements for all record drawing submittals:**

All drawings shall be prepared in Micro Station .DGN format, unless otherwise approved by the City Engineer. Transmittal letters shall consist of a list of files being submitted, a description of the data in each file, and a level/layer schematic of each design file. DGN design files should have working units as follows: master units in feet, no sub-units, and 1,000 positional units. All data submitted shall use NAD 1983 Alabama East Zone coordinates as described in The Code of Alabama (1975), section 35-2-1 and NGVD 1929. Digital files shall be submitted on 4-3/4" CD ROM, 100 MB zip drive, 3 and ½ inch floppy disk, or to the City of Huntsville F.T. P. Site. Contractor is required to certify that record drawings are in the correct format upon submittal. Record Drawings shall be prepared and provided to the OWNER in the manner required and described below in Level Symbology.

**Record Drawing Criteria, unless otherwise noted by City Engineer:**

**1. Roadways:**

- a. Any changes during construction of roadway/intersections that differ from plan drawings.

**2. Sanitary Sewers:**

- a. Gravity Line
  - i. Horizontal Location of Manholes – Northing and easting Coordinates
  - ii. Vertical Location of Manholes – Lid elevation and Invert elevation.
  - iii. Changes in location of clean outs, or end of service lateral.
  - iv. Changes in length, slope, size, or material of lines.
- b. Force Mains
  - i. Horizontal Location of Air Relief/Vacuum/Isolation Valves – Northing and easting Coordinates
  - ii. Horizontal and Vertical Location of Fittings/Bends
  - iii. Changes in length, size, depth or material of lines
  - iv. Changes in restraint types
- c. Pump Stations
  - i. Changes in Structural Requirements – (length, width, thickness, cover, laps, bar size, spacing, materials, material strengths, etc.)
  - ii. Changes in Site Development and/or Landscaping
  - iii. Changes in Equipment

**3. Storm Drainage:**

- a. Structures (boxes, inlets, end treatments, etc.):
  - i. Horizontal locations of Features – Northing and easting coordinates
  - ii. Vertical location of Features – Tops and Inverts
  - iii. Changes in type, size, or material of feature.
- b. Pipes / Culverts:
  - i. Document length
  - ii. Document slope
  - iii. Document size
  - iv. Document invert elevation
  - v. Changes in material of structure
- c. Flumes, Ditches, and/or Swales/Berms: (the following are minimum requirements).

- d.
- i. Horizontal location (to verify location within described easements)

|                                        |                                                        |
|----------------------------------------|--------------------------------------------------------|
| For easement widths less than 15- feet | At 100-foot intervals along the centerline of feature. |
| For easement widths 15-feet or Greater | At 200-foot intervals along the centerline of feature. |

- ii. Vertical location (to verify positive drainage)

|                            |                                                        |
|----------------------------|--------------------------------------------------------|
| For slopes less than 0.5%  | At 50-foot intervals along the centerline of feature.  |
| For slopes 0.5% or greater | At 100-foot intervals along the centerline of feature. |

- iii. Changes in width or material of feature.
  - iv. Changes in location and type of geotechnical fabric used.
  - v. Changes in overall grading of site topography.
- e. Detention / Retention Facility:
- i. Changes in size, location, or material of facility.
  - ii. Changes in location and type of geotechnical fabric used.
  - iii. Where applicable, copy of maintenance agreement.

**Checklist for review of record drawings:**

- a. Changes in sidewalk location or size.
- b. Changes in shoulder widths.
- c. Changes in grades at intersections. (also to include changes in island location)
- d. Changes in location of driveway aprons.
- e. Changes in pavement section, to be supported by adequate documentation.
- f. Changes in gutter flow line elevation. (could be substituted in 3b) versus edge of pavement).
- g. Geotechnical fabric locations, to include vertical elevation.
- h. Changes in Traffic Engineering related items such as signals, signage and markings, etc.

Any other changes that may have occurred during construction.

**LEVEL SYMBOLOGY**

| DESIGN LEVEL | CONTENTS                    | LINE CODE | COLOR | WEIGHT | TEXT SIZE | FONT | CELL NAME |
|--------------|-----------------------------|-----------|-------|--------|-----------|------|-----------|
| 1            | State Plane Coordinate Grid | 0         | 0     | 0      | 20        | 0    |           |
| 2            | Benchmarks                  | 0         | 0     | 0      |           |      |           |
| 3            | Street Text                 | 0         | 3     | 0      | 20        | 0    |           |
| 4            | Street R/W                  | 7         | 0     | 0      |           |      |           |
| 5            | Street Centerline           | 7         | 0     | 0      |           |      |           |
| 6            | Street Pavement             | 0         | 3     | 0      |           |      |           |
| 6            | Proposed Street Pavement    | 3         | 16    | 0      |           |      |           |
| 7            | Parking Lots                | 1         | 3     | 1      |           |      |           |
| 8            | Secondary Roads             | 2         | 3     | 0      |           |      |           |
| 8            | Trails                      | 3         | 3     | 0      |           |      |           |
| 9            | Secondary Roads/Trails Text | 0         | 3     | 0      | 20        | 0    |           |
| 10           | Sidewalks                   | 5         | 3     | 0      |           |      |           |
| 11           | Bridges/Culverts            | 0         | 0     | 0      |           |      |           |
| 12           | Hydrology - Major           | 6         | 1     | 0      |           |      |           |
| 12           | Hydrology - Minor, Ditches  | 7         | 1     | 0      |           |      |           |
| 13           | Hydrology - Text            | 0         | 1     | 0      | 25        | 23   |           |

|    |                                                              |   |     |   |       |   |                  |
|----|--------------------------------------------------------------|---|-----|---|-------|---|------------------|
| 14 | Tailings & Quarries,<br>Athletic Fields/Text, misc.<br>areas | 0 | 1   | 0 |       |   |                  |
| 15 | City Limits/County Line                                      | 1 | 0   | 3 |       |   |                  |
| 16 | City /limit text                                             | 0 | 0   | 1 | 30    | 0 |                  |
| 17 | Railroad Tracks (Patterned)                                  | 0 | 2   | 0 |       |   | RR               |
| 18 | Railroad Text                                                | 0 | 2   | 0 | 25    | 0 |                  |
| 19 | Railroad R/W                                                 | 2 | 2   | 0 |       |   |                  |
| 20 | Utility Poles (Cell)                                         | 0 | 5   | 0 |       |   | P POLE           |
| 21 | Utility Easements                                            | 3 | 5   | 0 |       |   |                  |
| 22 | Utility Text                                                 | 0 | 5   | 1 |       |   |                  |
| 23 | Geographic Names                                             | 0 | 3   | 1 |       |   |                  |
| 24 | Building Structures                                          | 0 | 0   | 0 |       |   |                  |
|    | Pools and Text                                               | 0 | 1   | 0 | 10    | 1 |                  |
| 24 | Future Site of Structures                                    | 2 | 0   | 0 |       |   | STRUCT           |
|    | Existing Structures (exact<br>location and shape<br>unknown) | 2 | 0   | 0 |       |   | STRCEX           |
| 25 | Property Lines                                               | 6 | 6   | 1 |       |   |                  |
| 26 | Cadastral Polygons                                           | 6 | 6   | 0 |       |   |                  |
| 27 | Ownership Text                                               | 0 | 6   | 1 |       |   |                  |
| 28 | Cemeteries/Text                                              | 4 | 6   | 0 | 10    | 1 |                  |
| 29 | Lot Numbers                                                  |   |     |   | 25    | 0 |                  |
| 30 | Block Numbers                                                |   |     |   | 30    | 0 |                  |
| 31 | Addition Names                                               | 0 | 0   | 0 | 35    | 0 |                  |
| 32 | Open                                                         |   |     |   |       |   |                  |
| 33 | Lot Ticks                                                    |   |     |   |       |   |                  |
| 34 | Lot Lines/Property Lines                                     | 6 | 6   | 0 |       |   |                  |
| 35 | Trees/Hedge Rows                                             | 0 | 6   | 0 | AS=1  |   | TREES            |
| 36 | GPS Monuments                                                | 0 | 5   | 0 | 15    | 0 | GPS              |
| 37 | 2' Topo Contour                                              |   |     |   |       |   |                  |
| 38 | 5' Topo Contour                                              | 0 | 7   | 0 |       |   |                  |
| 39 | 25' Major Topo Contour                                       | 0 | 7   | 0 |       |   |                  |
| 40 | X Spot Elevation                                             | 0 | 7   | 0 |       |   |                  |
| 41 | FEMA Monuments/Labels                                        | 0 | 3/0 | 0 | 18    | 1 | GPSPNT           |
| 42 | Quarter Sections                                             |   |     |   |       |   |                  |
| 43 | Section Lines                                                | 0 | 5   | 0 |       |   |                  |
| 44 | Features                                                     | 0 | 2   | 0 |       |   |                  |
| 44 | Cell Towers                                                  | 0 | 12  | 0 | AS=1  |   | CELTWR           |
| 45 | Fences (Pattern)                                             | 0 | 8   | 0 | AS=1  |   | FENCE            |
| 46 | Format/Legend                                                | 0 | 0   | 0 |       |   | Limleg<br>Madleg |
| 47 | Mass Points                                                  | 0 | 7   | 2 |       |   |                  |
| 48 | Break Lines                                                  | 0 | 7   | 2 |       |   |                  |
| 49 | Open                                                         |   |     |   |       |   |                  |
| 50 | Signs                                                        |   |     |   |       |   |                  |
| 51 | Open                                                         |   |     |   |       |   |                  |
| 52 | Open                                                         |   |     |   |       |   |                  |
| 53 | Open                                                         |   |     |   |       |   |                  |
| 54 | Open                                                         |   |     |   |       |   |                  |
| 55 | Open                                                         |   |     |   |       |   |                  |
| 56 | Property Address                                             | 0 | 1   | 0 |       |   |                  |
| 57 | Text Tag for Buildings                                       | 0 | 1   | 0 | 10-20 | 1 |                  |
| 58 | Open                                                         |   |     |   |       |   |                  |
| 59 | Open                                                         |   |     |   |       |   |                  |
| 60 | Open                                                         |   |     |   |       |   |                  |
| 61 | Open                                                         |   |     |   |       |   |                  |
| 62 | Monuments for Setup<br>(point cell)                          |   |     |   |       |   |                  |
| 63 | Open                                                         |   |     |   |       |   |                  |

36. LIEN WAIVERS

Lien waivers will be required from all subcontractors working for the contractor. These lien waivers shall be included with your final payment package. The contractor is responsible for obtaining signatures from his subcontractors. If no subcontractors are used, contractor must provide a statement indicating such.

37. LOWEST RESPONSIBLE BIDDER

For the purpose of determining the lowest responsible bidder, the OWNER shall consider the base bid amount together with any options set forth in the Request for Bids. In the event that the City does not have sufficient funds to award both the base bid and all options, then the City reserves the right to determine the lowest responsible bidder on the base bid only or the base bid and the number of options affordable considering the funds available to the City for the procurement. This method for determining the low bidder is for the purpose of allowing the City to procure the most advantageous bid for the OWNER. City of Huntsville reserves the right to award any and/or all options at any time during the life of the contract.

38. NON-RESIDENT BIDDERS

"In awarding the Contract, preference will be given to Alabama resident contractors and a nonresident bidder domiciled in a state having laws granting preference to local contractors shall be awarded the Contract only on the same basis as the nonresident bidder's state awards contracts to Alabama contractors bidding under similar circumstances."

39. CORRECTION TO SECTION 80.08(C) of The City of Huntsville "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS" is revised as shown:

(C) DAYS WORK NOT PERMITTED: The Contractor shall not permit work on any on Sundays and the following holidays: New Year's Day, Martin Luther King's Birthday as nationally observed, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and Christmas Day, except with permission of the Director.

40. CORRECTION TO SECTION 80 – PROSECUTION AND PROGRESS 80.01 Subletting and Contract. (a) LIMITATIONS

The Contractor shall not sublet the contract or any portion thereof, or of his right, title, or interest therein, without written consent of the DIRECTOR. If such consent is given, the Contractor will be permitted to sublet a portion of the work, but shall perform with his own organization, work amounting to not less than 30 percent of the total contract cost. Any items designated in the contract as "specialty items" may be performed by sub-contract and the cost of such specialty items performed by sub-contract may be deducted from the total cost before computing the amount of work required to be performed by the contractor with his own organization. No sub-contracts, or transfer of contract, shall relieve the Contractor of his liability under the contract and bonds. The Department reserves the right to disapprove a request for permission to sublet when the proposed Subcontractor has been disqualified from bidding for those reasons listed in Subarticle 20.02 (b) and Article 30.03.

41. CORRECTION TO SECTION 80 – PROSECUTION AND PROGRESS 80.03 Progress Schedule of Operations

A critical path schedule is required within ten (10) days after award. The critical path schedule must be submitted in Microsoft Projects format (electronic format and hard copy), with the critical path highlighted. The critical path schedule shall show information on the task or tasks that must be finished on schedule for the project to finish on schedule. Task dependencies, constraints, and relationships shall be shown on the schedule. If the progress report (critical path) is not received, YOUR first pay estimate will NOT BE PROCESSED UNTIL IT IS RECEIVED). See section 80.03 and 80.04 for additional requirements.

42. CORRECTION TO SECTION 80 – PROSECUTION AND PROGRESS 80.09 (b) Contracts on a Calendar Day or Calendar Date Basis

§80.09 (b) first paragraph reads: "When the notice to proceed is delayed more than 10 calendar days after execution of the contract, the date of completion will be extended . . ." Shall be amended to read "When the notice to proceed is delayed more than 15 calendar days after execution of the contract, the date of completion will be extended . . ."

Section 80.09(B) is revised to remove the last sentence of the first paragraph: ( "Also where the total cost of the completed work exceeds the total cost shown on the proposal, an extension in calendar days will be granted the Contractor, as provided in Section 80.09(a)1." ) It is replaced by: "Where the scope of work is increased, an extension of time commensurate with the scope of the change may be granted by the OWNER when in his judgment, the facts justify an extension. The contractor shall provide justification substantiated to the satisfaction of the OWNER with any requests for time extensions. Justification shall include, but not be limited to, a revised schedule showing the impact to critical path tasks. "

43. CORRECTION TO SECTION 105 – EXCAVATION AND EMBANKMENT 105.04 (a) Method of Measurement

Section 105.04 will remain as stated when estimated borrow material is less than 2500 C.Y.

When estimated borrow material is more than 2500 C.Y., Section 105.04 is revised to remove the last paragraph: "Borrow material will be measured at the point of delivery, inside the delivery truck less 30 percent for shrinkage."

44. CORRECTION TO SECTION 847 – PIPE CULVERT JOINT SEALERS

Section 847 is deleted and replaced with Section 846 – Pipe Culvert Joint Sealers, ALDOT Specifications for Highway Construction, Current Edition.

45. NPDES CONSTRUCTION REQUIREMENTS

For areas of this project meeting the Alabama Department Of Environmental Management (ADEM) definition of a "Construction Site", the Developer "LW Redstone" shall prepare and apply for, pay the necessary fees, post the required registration at the jobsite prior to commencing work, and the contractor shall maintain the worksite and the project manager or Owner shall maintain the records in accordance with the ADEM requirements for National Pollutant Discharge Elimination System (NPDES) registration. Off site borrow pits utilized in the construction of this project are included in the requirement. NPDES Construction Site is construction that disturbs 1 acre or greater or will disturb less than 1 acre but is part of a larger common plan of development or sale whose total land disturbing activities total 1 acre or greater. An NPDES construction site also includes construction sites, irrespective of size, whose stormwater discharges have a reasonable potential to be a significant contributor of pollutants to a water of the State, or whose stormwater discharges have a reasonable potential to cause or contribute to a violation of an applicable Alabama water quality standard as determined by the Department. The Contractor is referred to the "Alabama Department Of Environmental Management Field Operations Division – Water Quality Program - Division 335 – 6" for complete definitions and requirements. The Contractor is also referred to Item 11 of these General Requirements, sections 50.15, 50.16, and 70.02 of the City of Huntsville "Standard Specifications For Construction Of Public Improvements, Contract Projects" (Specifications)

Contractor violations of the permit by rule which results in enforcement actions from ADEM including fines and/or work stoppage shall be the responsibility of the Contractor. Fines assessed to the Developer "LW Redstone" because of Contractor action shall be paid by the Contractor. No extension of contract time shall be considered as a result of enforcement. Enforcement history will also be considered by the OWNER in its decision to issue future proposals or award future contracts in accordance with disqualification provisions of Section 20.02(b) of the Specifications.

46. DELETION OF SECTION 50.01 – Authority of the Engineer of Record

This section is deleted.

47. SHOP DRAWINGS

The Contractor shall provide six (6) sets of all required submittals and deliver to the Project Manager or Owner for submittal to the Engineer for review and approval. The approval of shop drawings by the Engineer will cover only the features of the design and in no case shall this approval be considered to cover error or omissions in shop details or a check of any dimensions. The Contractor shall be responsible for the accuracy of the shop drawings, the fabrication of materials and the fit of all connections; and he shall bear the cost of all extra work in erection caused by errors in shop drawings or in fabrication, inaccurate

workmanship, misfits of connections or for any changes in fabrication necessary. No work shall be done on the material before the shop drawings have been approved. Any material that the Contractor orders prior to the approval shall be at the Contractor's risk.

Substitutions or changes whether indicated or implied on shop drawings will not be considered as changes regardless of the Engineer's approval of shop drawings unless the change has been previously submitted and approved as a change order per the requirements for changes in the contract.

After a shop drawing has been approved, no changes shall be made unless directed in writing to the Owner and acceptance by the Owner of said changes. Any acceptance of change by the Owner does not constitute a change to the contract unless that change has been approved and directed in writing per change order. Compensation for preparing and furnishing all shop and working drawings shall be included in the contract unit prices for the various pay items of work.

#### 48. E-VERIFY STATEMENT

The Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No. 2011-535, Code of Alabama (1975) § 31-13-1 through 31-13-30 (also known as and hereinafter referred to as "the Alabama Immigration Act") as amended by Act No. 2012-491 on May 16, 2012 is applicable to all competitively bid contracts with the City of Huntsville. As a condition for the award of a contract and as a term and condition of the contract with the City of Huntsville, in accordance with § 31-13-9 (a) of the Alabama Immigration Act, as amended, any business entity or employer that employs one or more employees shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama.

During the performance of the contract, such business entity or employer shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations. The business entity or employer shall assure that these requirements are included in each subcontract in accordance with §31-13-9(c). Failure to comply with these requirements may result in breach of contract, termination of the contract or subcontract, and possibly suspension or revocation of business licenses and permits in accordance with §31-13-9 (e) (1) & (2).

Code of Alabama (1975) § 31-13-9 (k) requires that the following clause be included in all City of Huntsville contracts that have been competitively bid and is hereby made a part of this contract:

"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."

Contractor's E-Verify Memorandum of Understanding shall be a part of the contract bid documents and shall be submitted with the bid package.

#### 49. CITY OF HUNTSVILLE'S TRAFFIC ENGINEERING DEPARTMENT CONSTRUCTION REQUIREMENTS

For areas of this project that require removal of traffic loops, striping, markings, rpm's and ceramic markers, the following shall apply:

1. **TRAFFIC SIGNAL LOOP REPAIRS** – All vehicular and bicycle detector loop replacements shall be in accordance with the Alabama Department of Transportation Standard Specifications for Highway Construction, current edition. Unless otherwise specified, traffic signal loops shall be replaced exactly as existed prior to any paving or resurfacing work. The general contractor will be responsible for documenting location of loops, location of any associated items for loop operation and assuring that loops are replaced exactly as existed prior to paving. All vehicular and bicycle loop repairs shall be replaced within fourteen (14) calendar days after paving work.
2. **TRAFFIC SIGNAL STRIPING, MARKINGS, RAISED PAVEMENT MARKERS AND CERAMIC MARKERS FOR GUIDANCE** - All traffic striping, markings, raised pavement markers and ceramic markers for guidance shall be in accordance with the Alabama Department of Transportation Standard Specifications for Highway Construction, current edition. Unless otherwise specified, traffic striping, markings, raised pavement markers and ceramic markers for guidance shall be replaced exactly as traffic striping, markings, raised pavement markers and ceramic markers for

3. guidance existed prior to any paving or resurfacing work. The general contractor will be responsible for documenting location of all striping, markings, raised pavement markers and ceramic markers for guidance and assuring that all are replaced exactly as existed prior to paving. All traffic striping, markings, raised pavement markers and ceramic markers for guidance shall be reflectorized. All resurfaced areas shall be marked with temporary striping and markings for traffic usage by nightfall each day, 7 days a week, in accordance with State of Alabama regulations. All permanent striping, markings, raised pavement markers and ceramic markers for guidance shall be replaced within thirty (30) calendar days after paving work.

#### 50. SURVIVABILITY OF CONTRACT PROVISIONS

Termination of this Contract by either party shall not affect the rights and obligations of the parties that accrued prior to the effective date of the termination. Terms and conditions of the contract that survive termination include, but are not necessarily limited to, provisions regarding payments, insurance, termination, warranty, governing law of the contract, liquidated damages, bonding requirements, notice procedures, waiver, and other requirements necessary and appropriate for the proper resolution of disputes, claims, and enforcement of the rights of the parties.

#### 51. SURETY BONDS

The Contractor shall furnish separate performance and payment bonds to the Owner within fifteen (15) days after the date of acceptance of this proposal by City Council action. Each bond shall set forth a penal sum in an amount not less than the Contract Price. Each bond furnished by the Contractor shall incorporate by reference the terms of this Contract as fully as though they were set forth verbatim in such bonds. In the event the Contract Price is adjusted by Change Order executed by the Contractor, the penal sum of both the performance bond and the payment bond shall be deemed increased by like amount. The performance and payment bonds furnished by the Contractor shall be in forms suitable to the Owner, in conformance with all the requirements of the Code of Alabama (1975), §39, and shall be executed by a surety, or sureties, reasonably suitable to the Owner. All bonds must be approved by the Mayor and the Clerk-Treasurer of the City of Huntsville.

#### 52. GOVERNING LAW

The Contract shall be governed by the laws of the State of Alabama.

#### 53. ALABAMA IMMIGRATION ACT (Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No. 2011-535, Code of Alabama (1975))

Compliance with the requirements of the (Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No. 2011-535, Code of Alabama (1975) § 31-13-1 through 31-13-30, as amended by Alabama Act 2012-241, commonly referred to as the Alabama Immigration Law, is required for City of Huntsville, Alabama contracts that are competitively bid as a condition of the contract performance. The Contractor shall submit in the bid package, with the requested information included on the form, the "City of Huntsville, Alabama Report of Ownership Form" listed in this document as Attachment "H". The bidder selected for award of the contract may be required to complete additional forms relating to citizenship or alien status of the bidder and its employees, including e-verify information, prior to award of a contract.

#### 54. SUCCESSORS AND ASSIGNS

The Owner and Contractor bind themselves, their successors and assigns to the other party hereto and to successors and assigns of such other party in respect to covenants, agreements, and obligations contained in this Contract. The Contractor shall not assign this Contract without written consent of the Owner. In no event shall a contract be assigned to an unsuccessful bidder whose bid was rejected because he or she was not a responsible or responsive bidder.

#### 55. WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

**56. RIGHTS AND REMEDIES**

Duties and obligations imposed by the Contract Documents and rights and remedies available there under shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

No action or failure to act by the Owner, Engineer, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

**57. ENTIRE AGREEMENT**

This Contract represents the entire agreement between the Owner and the Contractor and supersedes all prior communications, negotiations, representations or agreements, either written or oral. This agreement may be amended only by written instrument signed by both Owner and Contractor.

**58. THIRD-PARTY BENEFICIARIES**

L.W. Redstone, LLC and the United States of America through the Secretary of Department of the Army (Army) are considered to be third party beneficiaries to this contract Agreement. Otherwise, this contract Agreement shall inure solely to the benefit of the parties hereto and their successors and assigns. Nothing contained herein is intended to or shall create a contractual relationship with, or any rights in favor of, or any cause of action in favor of, any third party, other than L. W. Redstone, LLC and the Army against the OWNER or the ENGINEER.

**59. APPLICATION OF CITY OF HUNTSVILLE ENGINEERING OF PUBLIC WORKS DEPARTMENT STANDARD SPECIFICATIONS, 1991 EDITION. (Specifications)**

The Specifications shall apply with the following modifications, additions, and stipulations listed below and as modified in Sections 6, 27, 28, 29, 39, 40, 41, and 42 above. All measurement and payment shall be based on a lump sum amount for all work proposed. Where allowances are shown on the proposal forms and unit prices are shown, quantities shall be measured per the Specifications.

**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 10 DEFINITION OF TERMS**

- 10.01 Definitions.
- (a) **ABBREVIATIONS.**  
Add: PM – The Project Manager or Owner agent for the City of Huntsville

**SECTION 20 PROPOSAL REQUIREMENTS AND CONDITIONS**

- 20.01 Notice to Contractors (Advertisement).
- (a) **GENERAL.**  
Delete: "approximate quantities"
- (b) **QUANTITIES.**  
Delete: Entire paragraph
- 20.02 Qualification of Bidders.
- (a) **PREQUALIFICATION.**  
Delete: "equipment questionnaire"  
Delete the following sentence: "A corporation from another State can be issued a certificate valid for bidding only on projects involving Federal participation, without the certificate from the Secretary of State."
- (b) Under Item 6 in the last sentence  
Delete "or doing any subcontract work for a Prime Contractor."
- 20.03 Contents of Proposal Form.
- (a) **GENERAL.**  
Delete: "the approximate estimate of the various quantities of the pay items of the work to be performed and materials to be furnished, and the amount of the proposal guaranty"

- 20.04 Interpretation of Quantities in Bid Schedule.  
Delete entire paragraph
  - 20.06 Preparation of Proposal.  
(b) DETAILS.  
Delete entire paragraph
  - 20.07 Irregular Proposals.  
(b) UNBALANCED BIDDING.  
Delete entire paragraph
  - 20.08 Combination Bids.  
Replace item 1 with "Combination Bids must be submitted on the Combination Bid Form." Delete items 2 and 3 in their entirety
- SECTION 30                    AWARD AND EXECUTION OF CONTRACT
- 30.01 Consideration of Proposals.  
Delete from first sentence: "the summation of the products of the approximate quantities shown in the bid schedule by the unit bid prices" and replace with "the lump sum."  
Delete third sentence, in its entirety: "In the event of a discrepancy between unit bid prices and extensions, the unit bid price shall govern."
- SECTION 40                    SCOPE OF WORK
- SECTION 50                    CONTROL OF WORK
- 50.01 Authority of the Engineer of Record.  
Deleted
  - 50.04 Responsibilities of the Engineer of Record.  
Delete all references to "The Engineer of Record" and replace with "Project Manager" or "Owner" under items C and D.
  - 50.06 Coordination of Plans, Specifications, and Special Provisions.  
Delete all references to "The Engineer of Record" and replace with "Project Manager" or "Owner".
  - 50.07 Cooperation with Utilities and Non-Highway Public Facilities.  
Delete all references to "The Engineer of Record" and Engineer and replace with "Project Manager" or "Owner".
  - 50.08 Cooperation by the Contractor.  
Delete all references to "The Engineer of Record" and replace with "Project Manager or Owner and Engineer"
  - 50.09 Cooperation between Contractors.  
Delete all references to "Engineer" and replace with "Project Manager" or "Owner".
  - 50.10 Construction Stakes, Lines and Grades.  
Delete all references to "The Engineer of Record" and replace with "Project Manager" or "Owner".
  - 50.13 Removal of Unacceptable and Unauthorized Work.  
Delete all references to "The Engineer of Record" and replace with "Project Manager" or "Owner".
  - 50.17 Acceptance.  
Delete all references to "The Engineer of Record" and replace with "Project Manager" or "Owner".

SECTION 60 CONTROL OF MATERIALS  
Replace all references to "Engineer" or "Engineer of Record" with "Project Manager" or "Owner"

SECTION 70 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC  
Replace all references to "Engineer" or "Engineer of Record" with "Project Manager" or "Owner"

SECTION 80 PROSECUTION AND PROGRESS  
Replace all references to "Engineer" or "Engineer of Record" with "Project Manager" or "Owner"  
Delete the schedule for liquidated damages in section 80.11.

SECTION 90 MEASUREMENT AND PAYMENT

## DIVISION II - CONSTRUCTION DETAILS

### PART 1 – EARTHWORK

SECTION 101 CLEARING AND GRUBBING

- 101.01 No burning allowed on-site.
- 101.02 General Methods (b) Debris shall be removed from the site and disposed of in an off-site location in a legal manner. Delete "Trees and stumps outside of the construction limits that are not to remain shall be cut off even with the ground surface."
- 101.04 Basis of payment is lump sum. References to Section 105 are deleted.
- 101.05 Exclusions are deleted.

SECTION 103 REMOVAL OF MISCELLANEOUS EXISTING DRAINAGE AND OTHER FACILITIES

103.06 Basis of Payment is lump sum.

SECTION 105 EXCAVATION AND EMBANKMENT – OMITTED  
Refer to Supplemental Specifications EARTHWORK for requirements.

SECTION 107 STRUCTURE EXCAVATION AND BACKFILL FOR DRAINAGE

107.04 Method of Measurement is deleted.

107.05 Payment will be under the base bid as part of the lump sum.

SECTION 108 EXCAVATION FOR BRIDGES – OMITTED

SECTION 109 LANDSLIDE CORRECTION – OMITTED

SECTION 111 STABILIZED ROADBED

111.03B Any references to section 105 do not apply

111.04 Method of Measurement is deleted.

111.05 Payment will be under the base bid as part of the lump sum.

SECTION 113 BRIDGE DETOUR - OMITTED

**PART 2 – BASES**

**SECTION 201 SUBGRADE**

201.02 Material shall have a Liquid Limit (LL) of 50 or less as specified in supplemental specifications EARTHWORK. Section 105 has been omitted. Solid Rock is allowed twenty-four (24) inches below the finish subgrade elevation.

201.03 Construction Requirements to plus or minus one tenth of a foot (0.10') (a) Undercutting shall be as directed per the Owner's on-site representative. Refer to Supplemental specifications EARTHWORK for additional information.

(b) Subgrade Preparation – remove the twelve (12) inch requirement noted and replace with the following: Unsuitable materials encountered in the subgrade shall be removed to a depth at least thirty-six (36) inches in building pad areas and at least twelve (12) inches in all other areas. Refer to Supplemental Specifications EARTHWORK for additional information.

(c) Density Requirements shall have the maximum dry density at ninety-eight (98) percent for all areas below subgrade elevation.

(d) Surface Requirements shall be plus or minus one tenth of a foot (0.10').

201.04 Sampling and testing requirements (b) Density Requirements – OMIT 1. And replace with the following:

1 test for each 2,500 SF each lift in building pad areas

1 test for each 5,000 SF each lift in boulevards, side streets, and paved areas

1 test for each 10,000 SF each lift in mass graded areas

201.05 Basis of Payment is lump sum.

**SECTION 205 DENSE GRADED AGGREGATE BASE COURSE**

205.05 (a) and (b): Basis of Payment is lump sum.

**SECTION 206 DENSITY REQUIREMENTS FOR COMPACTION**

**PART 3 – SURFACING AND PAVEMENTS**

**SECTION 401 BITUMINOUS SURFACE TREATMENT**

401.05 Method of Measurement is deleted.

401.06 Basis of Payment is lump sum.

**SECTION 402 SLURRY SEAL COAT – OMITTED**

**SECTION 405 TACK COAT**

405.04 Method of Measurement is deleted.

405.05 Basis of Payment is lump sum.

**SECTION 406 REPAVED BITUMINOUS PAVEMENTS**

406.04 Method of Measurement is deleted.

406.05 Basis of Payment is lump sum.

**SECTION 408 PLANING (MILLING) OF EXISTING PAVEMENT**

406.04 Method of Measurement is deleted.

408.06 (a) &(b): Basis of Payment is lump sum.

**SECTION 410 BITUMINOUS PLANT MIX PAVEMENTS**

410.08 Method of Measurement is deleted.

410.09 Basis of Payment is lump sum.

**SECTION 411 HOT BITUMINOUS PAVEMENT**

411.04 Method of Measurement is deleted.

411.05 Basis of Payment is lump sum.

**SECTION 414 BITUMINOUS CONCRETE BINDER LAYER – OMITTED**

Refer to ALDOT Spec 424A for requirements. Basis of payment is lump sum

**SECTION 416 BITUMINOUS CONCRETE WEARING SURFACE – OMITTED**

Refer to ALDOT Spec 424B for requirements. Basis of payment is lump sum

**PART 4 – STRUCTURES**

**SECTION 501 STRUCTURAL PORTLAND CEMENT CONCRETE**

**SECTION 503 STEEL REINFORCEMENT**

503.04 Method of Measurement is deleted.

503.05 Basis of Payment is lump sum.

**SECTION 505 STRUCTURE FOUNDATION**

505.04 Method of Measurement is deleted.

505.05 Basis of Payment is lump sum.

**SECTION 507 PILING – OMITTED**

**SECTION 509 STRUCTURE STEEL AND MISCELLANEOUS METALS – OMITTED**

**SECTION 511 BRIDGES – OMITTED**

**SECTION 513 PRESTRESSED CONCRETE BRIDGE MEMBERS – OMITTED**

**SECTION 515 LINSEED OIL PROTECTIVE COATING FOR BRIDGE DECKS - OMITTED**

**SECTION 517 BRIDGE AND SIDEWALK HANDRAILS – OMITTED**

**SECTION 519 REPAIR OR RAISED EXISTING BRIDGES – OMITTED**

**SECTION 520 STEEL BRIDGE PAINTING – OMITTED**

**SECTION 521 BRIDGE JOINT SEALS – OMITTED**

**SECTION 523 REINFORCED CONCRETE BOX CULVERTS**

523.04 Method of Measurement is deleted.

- 523.05 Basis of Payment is lump sum.
- SECTION 525 CONCRETE RETAINING WALLS AND CRIBBING – OMITTED
- SECTION 527 STORM SEWER PIPE
  - 527.03 Construction Requirements (c) Pipe Bedding
    - 1. Remove "Where soft, unyielding soil, rock.....under Unclassified Excavation". Refer to Bedding Detail DR-166on sheet C5.0.
  - 527.04 Method of Measurement is deleted.
  - 527.05 Basis of Payment is lump sum.
- SECTION 531 RELAID PIPE
  - 531.04 Method of Measurement is deleted.
  - 531.05 Basis of Payment is lump sum.
- PART 5 – INCIDENTALS
- SECTION 601 ENGINEERS FIELD OFFICE – OMITTED
- SECTION 603 PIPE UNDERDRAIN
  - 603.02 Materials – Refer to Section 853 in lieu of 851
  - 603.04 Method of Measurement is deleted.
  - 603.05 Basis of Payment is lump sum.
- SECTION 605 RIPRAP
  - 605.04 Method of Measurement is deleted.
  - 605.05 Basis of Payment is lump sum.
- SECTION 607 MORTAR FOR MASONRY
  - 607.04 Method of Measurement is deleted.
  - 607.05 Basis of Payment is lump sum.
- SECTION 609 RUBBLE MASONRY – OMITTED
- SECTION 611 BRICK AND CONCRETE BLOCK MASONRY
  - 611.04 Method of Measurement is deleted.
  - 611.05 Basis of Payment is lump sum.
- SECTION 613 SLOPE PAVING
  - 613.04 Method of Measurement is deleted.
  - 613.05 Basis of Payment is lump sum.
- SECTION 615 GROUTED RIPRAP - OMITTED
- SECTION 617 CONCRETE SIDEWALKS AND DRIVEWAYS

- 617.04 Method of Measurement is deleted.
- 617.05 Basis of Payment is lump sum.
- SECTION 619 PIPE CULVERT END TREATMENTS
  - 619.04 Method of Measurement is deleted.
  - 619.05 Basis of Payment is lump sum.
- SECTION 620 MINOR STRUCTURE CONCRETE
  - 620.04 Method of Measurement is deleted.
  - 620.05 Basis of Payment is lump sum.
- SECTION 621 INLETS, JUNCTION BOXES, MANHOLES AND MISCELLANEOUS DRAINAGE STRUCTURES
  - 621.04 Method of Measurement is deleted.
  - 621.05 Basis of Payment is lump sum.
- SECTION 623 MANHOLES FOR SANITARY SEWERS – OMITTED
 

Refer to the City of Huntsville Engineering Department "Design and Acceptance Manual for Sanitary Sewers" dated March 2011 for all sanitary sewer information.
- SECTION 625 CURB, GUTTER, AND COMBINATION CURB AND GUTTER
  - 625.04 Method of Measurement is deleted.
  - 625.05 Basis of Payment is lump sum.
- SECTION 627 CONCRETE MEDIAN AND SAFETY BARRIER - OMITTED
- SECTION 629 GUARDRAIL AND BARRIER RAIL – OMITTED
- SECTION 631 CHAIN LINK INDUSTRIAL FENCE – OMITTED
- SECTION 633 WOVEN WIRE FENCE – OMITTED
- SECTION 635 BARBED WIRE FENCE – OMITTED
- SECTION 637 FENCE RESET – OMITTED
- SECTION 641 WATER PIPE - OMITTED
 

Refer to Huntsville Utilities Water Department Facilities Specifications dated 2008 for all water system requirements.

Refer to Supplemental Specification Irrigation for additional information.
- SECTION 643 FIRE HYDRANTS RESET - OMITTED
 

Refer to Huntsville Utilities Water Department Facilities Specifications dated 2008 for all water system requirements.
- SECTION 645 WATER METERS AND VALVE BOXES RESET
 

Refer to Huntsville Utilities Water Department Facilities Specifications dated 2008 for all water system requirements.

Refer to Supplemental Specification Irrigation for additional information.

**SECTION 647 SANITARY SEWERS, GRAVITY FLOW - OMITTED**

Refer to the City of Huntsville Engineering Department "Design and Acceptance Manual for Sanitary Sewers" dated March 2011 for all sanitary sewer information.

**SECTION 648 ENCASEMENT PIPE FOR UTILITIES - OMITTED**

**SECTION 649 TOPSOIL** 649.02 Materials (c) Source of Material will be from the project site. Any excess topsoil remaining after the site has been replated shall be stockpiled in the off-site area as designated on Exhibit #2 for the Owner's future use.

649.04 Method of Measurement is deleted.

649.05 Basis of Payment is lump sum.

Refer to Supplemental Specifications Landscape for additional information.

**SECTION 651 GROUND PREPARATION AND FERTILIZERS FOR EROSION CONTROL**

651.04 Method of Measurement is deleted.

651.05 Basis of Payment is lump sum.

Refer to Supplemental Specifications Landscape for additional information.

**SECTION 653 SEEDING**

653.04 Method of Measurement is deleted.

662.05 Shall be renumbered to 653.05 and the Basis of Payment is lump sum and shall include installation, establishment, and maintenance for scope area.

Refer to Supplemental Specifications Landscape for additional information.

**SECTION 654 SPRIGGING – OMITTED**

**SECTION 655 SOLID SODDING - OMITTED**

655.04 Method of Measurement is deleted.

655.05 Basis of Payment is lump sum and shall include installation, establishment, and maintenance for scope area.

Refer to Supplemental Specifications Landscape for additional information.

**SECTION 657 MULCHING**

657.04 Method of Measurement is deleted.

657.05 Basis of Payment is lump sum and shall include installation, establishment, and maintenance for scope area.

Refer to Supplemental Specifications Landscape for additional information.

**SECTION 659 HYDRO-SEEDING AND MULCHING**

659.04 Method of Measurement is deleted.

659.05 Basis of Payment is lump sum and shall include installation, establishment, and maintenance for scope area.

- Refer to Supplemental Specifications Landscape for additional information.
- SECTION 661            EROSION CONTROL NETTING**
- 661.05 Method of Measurement is deleted.
- 661.06 Basis of Payment is lump sum and shall include installation, establishment, and maintenance for scope area.
- SECTION 663            VINES, SHRUBS AND TREE PLANTING – OMITTED**
- Refer to Supplemental Specifications Landscape for additional information.
- SECTION 665            TRANSPLANTING TREES, SHRUBS AND VINES – OMITTED**
- Refer to Supplemental Specifications Landscape for additional information.
- SECTION 667            TREE WELLS AND TREE ROOT PROTECTION – OMITTED**
- Refer to Supplemental Specifications Landscape for additional information.
- SECTION 669            ROOT PRUNING – OMITTED**
- Refer to Supplemental Specifications Landscape for additional information.
- SECTION 671            TEMPORARY EROSION CONTROL**
- 671.01 General (b) Requirements 2. and 3. Remove the 5 acre maximum disturbed area restriction for these two paragraphs. The Contractor shall limit the areas of disturbance at any given time based on the work schedule and weather to minimize erosion on the site.
- 671.02 Materials. Replace Hay Bales with Straw Wattles with a minimum diameter of eight (8) inches or greater. Refer to the plans for additional information.
- 671.03 Construction Requirements (h) Hay Bales. Replace with Straw Wattles.
- 671.04 Method of Measurement is deleted.
- 671.05 Basis of Payment is lump sum and shall include installation, establishment, maintenance, and removal for scope area.
- SECTION 673            LOW PRESSURE AIR TESTING FOR SEWER LINES – OMITTED**
- Refer to the City of Huntsville Engineering Department "Design and Acceptance Manual for Sanitary Sewers" dated March 2011.
- SECTION 677            MANHOLE FRAMES AND COVERS**
- 677.01 Description – This section only applies to storm drainage. Delete any reference to sanitary sewers. Refer to the City of Huntsville Engineering Department "Design and Acceptance Manual for Sanitary Sewers" dated March 2011 for all sanitary sewer information.
- 677.04 Method of Measurement is deleted.
- 677.05 Basis of Payment is lump sum.
- SECTION 679            GRINDER PUMP STATIONS – OMITTED**
- SECTION 681            PRESSURE SANITARY SEWER SYSTEM – OMITTED**

SECTION 685 WASTEWATER LIFT STATION - OMITTED

PART 6 – TRAFFIC CONTROL DEVICES AND STREET LIGHTING

SECTION 701 TRAFFIC STRIPE

- 701.04 Method of Measurement is deleted.
- 701.05 Basis of Payment is lump sum.

SECTION 703 TRAFFIC CONTROL MARKINGS AND LEGENDS

- 703.04 Method of Measurement is deleted.
- 703.05 Basis of Payment is lump sum.

SECTION 705 PERMANENT BARRICADE - OMITTED

SECTION 707 PORTABLE CONCRETE SAFETY BARRIERS AND IMPACT ATTENUATORS

- 707.04 Method of Measurement is deleted.
- 707.05 Basis of Payment is lump sum.

SECTION 709 TRAFFIC CONTROL DEVICES FOR CONSTRUCTION WORK ZONES

- 709.04 Method of Measurement is deleted.
- 709.05 Basis of Payment is lump sum.

SECTION 711 PORTABLE SEQUENTIAL ARROW AND CHEVRON SIGN UNIT

- 711.04 Method of Measurement is deleted.
- 711.05 Basis of Payment is lump sum.

SECTION 713 ELECTRICAL CONDUIT UNDER ROADWAYS – OMITTED  
Refer to Huntsville Utilities Electric Department General Specifications for  
Installation for Underground Utilities dated October 2008 for all electrical system  
requirements.

DIVISION III - MATERIALS

SECTION 800 MATERIALS

SECTION 801 COURSE AGGREGATE

SECTION 805 FINE AGGREGATE

SECTION 807 BITUMINOUS MATERIALS

SECTION 808 MINERAL FILLER, HYDRATED LIME, CALCIUM CHLORIDE BRICKBLOCKS

SECTION 809 FLY ASH

SECTION 811 WATER

SECTION 813 AIR ENTRAINING ADDITIVES

SECTION 815 RETARDERS AND REDUCERS

SECTION 817 GEOTEXTILES

SECTION 819 MASONRY STONE - OMITTED

|             |                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| SECTION 821 | RIPRAP MATERIALS                                                                                                                                         |
| SECTION 823 | CEMENT                                                                                                                                                   |
| SECTION 825 | SELECTED MATERIALS                                                                                                                                       |
| SECTION 826 | CRUSHED AGGREGATE BASE MATERIALS                                                                                                                         |
| SECTION 827 | LOCAL SAND AND SAND-GRAVEL FOR MISCELLANEOUS CONSTRUCTION USE                                                                                            |
| SECTION 829 | CONCRETE CURING MATERIAL                                                                                                                                 |
| SECTION 831 | CONCRETE JOINT FILLERS, SEALERS AND WATERSTOP MATERIALS                                                                                                  |
| SECTION 833 | LUMBER AND TIMBER UNTREATED AND TREATED                                                                                                                  |
| SECTION 835 | PILING – CONCRETE AND STEEL – OMITTED                                                                                                                    |
| SECTION 837 | STEEL REINFORCEMENT                                                                                                                                      |
| SECTION 839 | STRUCTURE STEEL, FASTENERS AND MISCELLANEOUS METALS - OMITTED                                                                                            |
| SECTION 841 | ELASTOMERIC BEARING PADS – OMITTED                                                                                                                       |
| SECTION 843 | PERFORMED FABRIC BEARINGS- OMITTED                                                                                                                       |
| SECTION 845 | ROUND AND ARCH CORRUGATED STEEL ROADWAY AND SIDEDRAIN PIPE – OMITTED                                                                                     |
| SECTION 847 | PIPE CULVERT JOINT SEALERS<br><br>Replaced with Section 846 – Pipe Culvert Joint Sealers, ALDOT Specifications for Highway Construction, Current Edition |
| SECTION 849 | CIRCULAR AND ARCH CONCRETE ROADWAY PIPE                                                                                                                  |
| SECTION 853 | PIPE UNDERDRAIN                                                                                                                                          |
| SECTION 854 | SEWER PIPE - OMITTED<br><br>Refer to the City of Huntsville Engineering Department "Design and Acceptance Manual for Sanitary Sewers" dated March 2011.  |
| SECTION 859 | PAINTS, ENAMELS, VARNISHES, PIGMENTS, VEHICLES AND OTHER RELATED MATERIALS                                                                               |
| SECTION 861 | TRAFFIC MARKING MATERIALS                                                                                                                                |
| SECTION 862 | FAST-DRY TRAFFIC PAINT                                                                                                                                   |
| SECTION 863 | ROADSIDE IMPROVEMENT MATERIALS                                                                                                                           |
| SECTION 865 | UTILITY ENCASEMENT PIPE – OMITTED                                                                                                                        |
| SECTION 867 | WATER PIPE - OMITTED<br><br>Refer to Huntsville Utilities Water Department Facilities Specifications dated 2008 for all water system requirements.       |
| SECTION 869 | GUARDRAIL AND BARRIER RAIL MATERIALS – OMITTED                                                                                                           |

|             |                                |
|-------------|--------------------------------|
| SECTION 871 | FENCING MATERIALS – OMITTED    |
| SECTION 880 | SIGN MATERIALS                 |
| SECTION 881 | DELINEATORS AND HAZARD MARKERS |
| SECTION 882 | PAVEMENT MARKERS               |

# **Supplemental Specifications**

## SECTION – EARTHWORK

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements, Supplement to General Requirements, Special Conditions, and Supplemental Specifications, apply to this Section.
- B. Report of Subsurface Exploration and Geotechnical Evaluation Redstone Gateway, Phase IA, Mass Grading Package, Huntsville, AL, Building and Earth project #HV10019 dated September 22, 2010; Report of Subsurface Exploration and Geotechnical Evaluation Retail Road Package 1F – Redstone Gateway Extension, Market Street and Overlook Road Relocation (Unsecure Area), Huntsville, AL, Building and Earth project #HV10019 dated August 5, 2011; and Pond Liner Recommendations 5 Acre Pond, Redstone Gateway Development, Redstone Arsenal, AL Building and Earth project #HV11002 dated March 13, 2012. These documents are provided for general information purposes only and is not a part of the contract documents. The Owner assumes no responsibility for any interpretations of site conditions by the contractor from this project document.
- C. Final Environmental Assessment for the North Rideout Road Enhanced Use Lease Site Development at Redstone Arsenal, AL prepared by URS Corporation and LW Redstone Company, LLC dated December 2008.

#### 1.2 SUMMARY

- A. This Section includes all earthwork activities (excavating and filling) as indicated on the drawings to the required lines, dimensions, contours and elevations for the proposed improvements. This includes but is not limited to the following:
  - 1. Preparing subgrades for slab-on-grade, walks, pavements, turf, and grasses and plants.
  - 2. Excavating and backfilling for structures.
  - 3. Subsurface drainage backfill for walls and trenches.
  - 4. Excavating and backfilling trenches and pits.
  - 5. Stripping of topsoil regardless of depth (isolated deep pockets of topsoil up to 3' in depth should be anticipated as outlined in the geotechnical report).
  - 6. Grubbing of deep root systems (deep grubbing should be anticipated in areas covered with mature trees).
  - 7. Mass excavations (earth and/or rock).
  - 8. All excavation to the "cut line" regardless of material encountered.
  - 9. All filling activities.
  - 10. The contractor shall work with the Owner throughout the construction process regarding fine grading & trench excavation material. If there is excess material on-site that cannot be accommodated by the proposed grading, then the contractor shall notify the Owner's on-site representative so the proposed grading limits can be extended to allow for the excess material to be placed and compacted on-site at no additional cost to the Owner.
  - 11. Off-site removal or on-site processing of boulders to suitable size for use as fill materials.

12. Grading in stages as may be required due to phasing.
13. Over excavation of rock or highly plastic clays in utility trenches, mass graded areas, and roadways and replacement with compacted structural fill to eliminate rock and or highly plastic clays from the upper regions of fill mass.
14. Placement and compaction of the 12" thick low permeability soil pond liner.
15. Re-plating of topsoil and off-site disposal of excess topsoil. Note that the pond liner shall be plated with a 4" thick layer of clean topsoil on sides and 24" of thick layer of clean topsoil in littoral zones.
16. Dewatering.
17. Temporary excavation and filling as necessary to control storm water runoff and on-site erosion.
18. Undercutting of soft, unsuitable soils and "fat" clays and replace with compacted engineered fill.
19. Installation of stabilization fabric and stone as necessary.
20. Overfilling and cutting back fill slopes.
21. Moisture conditioning and re-compacting the on-site soils for suitable placement as structural fill as required.
22. Re-conditioning of previously compacted areas when soils get wet prior to acceptance and/or turning over of area to the Owner.

B. Related Sections:

1. City of Huntsville Engineering of Public Works Department Standard Specifications 1991 Edition as modified in Supplement to General Requirements.

1.3 UNIT PRICES

- A. All earthwork associated with this project shall be bid lump sum as unclassified to subgrade and/or cut line. This shall include, but not be limited to those items outlined in Section 1.2 above.

However, a certain portion of the earthwork will be handled with a quantity allowance with unit price being provided on the proposal form to be included in the base bid. The Owner's on-site representative will be solely responsible for determining the suitability of soils encountered. The application of these allowances and unit prices shall be at the sole discretion of the Owner. Payment for all items will be made based on actual volume of excavation "In Place". The Owner's land surveyor will provide a topographic map of actual field conditions prior to and upon completion of excavation (Prior to replacing material).

Note that all unit prices on the Schedule of Values are being provided for the addition to and deletion from the contract as required by changing field conditions during construction.

1.4 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  2. Final Backfill: Backfill placed over initial backfill to fill a trench.

- B. **Base Course:** Aggregate layer placed between the sub base course and hot-mix asphalt paving.
- C. **Bedding Course:** Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
- D. **Borrow Soil:** Satisfactory soil imported from on-site for use as fill or backfill.
- E. **Cut Line:**
  - 1. In a cut section, the cut line shall be defined as subgrade elevation or elevation required by other specified hold downs, over excavation, trench excavation, etc.
  - 2. In roadway areas where highly plastic "fat clays" are encountered at subgrade elevation of within one (1) foot of subgrade elevation as determined by the Owner via test pits dug by the contractor, the cut line shall be one (1) foot below planned subgrade elevation and the over excavation shall extend five (5) feet beyond the curb line or proposed future curb line.
  - 3. In a fill section, the cut line shall be defined as the elevation achieved upon completion of all topsoil stripping, grubbing operations, etc. to a maximum depth of 3' as approved by the Owner's on-site representative prior to placing fill material. An additional one (1) foot below defined above topsoil/grubbing removal elevation will also be the responsibility of the contractor and shall be included in their base bid (example: 4" strip topsoil + 1vf = 1.33 vf in base bid, or worst case scenario example: 3vf strip topsoil + 1vf = 4vf in base bid).
  - 4. In all areas outside of the roadways and building pads where highly plastic "fat clays" are encountered at subgrade elevation of within one (1) foot of subgrade elevation as determined by the Owner via test pits dug by the contractor, the cut line shall be one (1) foot below planned subgrade elevation.
- F. **Excavation:** Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
  - 1. **Authorized Additional Excavation:** Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by the Owner's on-site representative. Authorized additional excavation and replacement material will be paid for according to 1.3 Unit Prices A. above.
  - 2. **Unauthorized Excavation:** Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner's on-site representative. Unauthorized excavation, as well as remedial work directed by Owner's on-site representative, shall be without additional compensation for excavation or backfilling.
- G. **Fill:** Soil materials used to raise existing grades.
- H. **Structures:** Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. **Sub base Course:** Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement.
- J. **Subgrade:** Uppermost surface of an excavation or the top surface of a fill or backfill immediately below sub base, drainage fill, drainage course, or topsoil materials.

- K. Utilities: On-site overhead wires, poles, towers and underground pipes, conduits, ducts, and cables.

## 1.5 SUBMITTALS

- A. Product Data: For each type of the following manufactured products required, submit six (6) copies to the Owner for approval prior to installation:
  - 1. Geotextiles.
  - 2. Controlled low-strength material, including design mix.
- B. Samples for Verification: For the following products, in sizes indicated below:
  - 1. Geotextile: 12 by 12 inches.
- C. Qualification Data: For qualified testing agency performing and providing construction material testing reports (CMTR's).
- D. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill, Contractor shall establish the area that needs testing a minimum of three (3) days prior to working in that area.
- E. Blasting plan approved by the City of Huntsville Environmental Management and Natural Resources Department.
- F. Seismic survey report from seismic survey agency meeting the City of Huntsville requirements.
- G. Pre-excavation Photographs or Videotape: At the Contractor's discretion, show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earth moving or blasting operations. Submit before earth moving or blasting begins. Information to be provided on a CD or in DVD format.
- H. Contractor's Soil Material Management and Quality Control Plan

**Purpose:** It is required prior to bid that the Contractor *clearly understands* the requirements of the contract and project documents and specifications. The contract documents and specifications have specific criteria for suitable fill soils, material size and type, moisture and soil plasticity requirements, compaction, unclassified excavation, management of surface and subsurface water and other related items. Additionally, the bidders are required to understand and evaluate any site restrictions or limitations regarding availability and quantity of acceptable soil materials, off-site borrow requirements, excavation methods, blasting or other excavation restrictions.

**Subsurface Information:** Subsurface information provided by the Owner is of limited nature based on widely spaced exploratory borings and is only intended for design guidance purposes and should not be assumed to be sufficient to prepare a detailed or accurate site work bid. No representation is made in the report regarding the location, quantities or availability of different types of materials as required by the project documents and specifications. The geotechnical report provided by the Owner is not a contract document.

The bidders are therefore advised to attend the supplementary exploration provided by the Owner at the project site. Date to be determined via addendum. The bidders will make themselves familiar with the project and can use this supplementary exploration to determine material types that will be encountered, borrow sources, excavation methods and sequence, dewatering requirements, availability and quantity of suitable soils etc.

**Minimum Requirements of Soil Material Management and Quality Control Plan (SMM-QC):** Within one (1) week of the Notice to Proceed, the Contractor shall prepare a Soil Material Management and Quality Control plan as generally outlined below and submit six (6) copies to the Owner for approval. Approval is required prior to earthwork activities commencing. As a minimum, the following sections will be addressed in the SMM-QC plan.

- 1.0 Applicable Specification Sections and Excavation/ Fill Placement Plan
- 2.0 On-site Management of Suitable and Unsuitable Materials
- 3.0 Blasting, Material Fragmentation, Vibration Control and Monitoring Plan
- 4.0 Materials Control, Segregation/Stockpile, Blending Plan and Construction Sequence
- 5.0 Field Verification of Suitable Soils for Specification Compliance
- 6.0 Soil and Rock Fill Placement and Compaction Methods
- 7.0 Moisture Control and Construction Area Site Drainage Management
- 8.0 Quality Control Sampling and Testing- Notification of Owners Testing Agent
- 9.0 Contractor Field Management and Supervision
- 10.0 Contractor QC Plans and Testing
- 11.0 Disposal of Unsuitable Materials
- Appendices – If applicable

The other specific items the plan should address include the following:

- Preconstruction Material Source Characterization Sampling and Testing
- Schedule of Production Operations
- Schedule of Materials Placement Operations
- Control Charts Used for Materials Management and Placement
- Contractor's Field Quality Control Procedure and Responsible Persons In-Charge

## 1.6 QUALITY ASSURANCE

- A. Blasting: Apply for, and obtain, a blasting permit from the City of Huntsville. Comply with applicable requirements in NFPA 495, "Explosive Materials Code," and prepare a blasting plan for review reporting the following:
1. Types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
  2. Seismographic monitoring during blasting operations.
  3. Any blasting near the TVA transmission line shall be coordinated with TVA, Benny Westmoreland, at 256-851-3450 at least 48 hours in advance of work.
  4. Any blasting near the Huntsville Utilities temporary or permanent substations shall be coordinated with Huntsville Utilities, Trent Hall, at 256-652-8620 at least 48 hours in advance of work.

5. Any blasting near the Redstone Arsenal transmission or distribution lines shall be coordinated with Redstone Arsenal Directorate of Public Works, Jerry Robinson, at 256-876-3122 at least 48 hours in advance of work.
- B. Seismic Survey Agency: An independent testing agency, meeting the City of Huntsville requirements, experienced in seismic surveys and blasting procedures, to perform the following services and submit this information to the Owner for review:
1. Report types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
  2. Seismographic monitoring during blasting operations.
- C. Pre-excavation Conference: Owner will conduct a conference with all Contractors at the project site early in the construction phase.

#### 1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner.
  2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
  3. Existing utilities shown on the drawings are from a combination of field locations, and utility company records. It is the Contractor's responsibility to field verify existing utilities prior to construction. This may require the Contractor to "pot hole" on top of the underground utility line to verify its location.
  4. Demolish and completely remove from site existing underground and overhead utilities indicated to be removed. Coordinate with utility companies to shut off services if lines appear to be or are active.
  5. Contours and existing topography shown on the drawings are believed to be reasonably correct. Contractor shall note that the existing topography was developed by the aid of a combination ground run and aerial survey. It shall be the Contractor's responsibility to determine any discrepancies which would affect his work, to make allowance for such discrepancies in the contract lump sum, and notify the Owner in writing of such discrepancies and allowances made prior to bidding.
- B. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.
- C. Do not commence earth moving operations until temporary erosion and sedimentation control measures are installed which are specified on the plans and per Section 671.
- D. The following practices are prohibited within tree protection zones:
1. Storage of construction materials, debris, or excavated material.
  2. Parking vehicles or equipment.

3. Foot traffic.
  4. Erection of sheds or structures.
  5. Impoundment of water.
  6. Excavation or other digging unless otherwise indicated.
  7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- E. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- 1.8 REFERENCE STANDARDS
- A. Follow current publications to the extent indicated by references thereto.
  - B. American Association of State Highway and Transportation Officials Standard Specifications (AASHTO).
  - C. American Society for Testing and Material (ASTM):
    1. D 422 Method for Particle Size Analysis of Soil.
    2. D 698 Tests for Moisture-Density Relations of Soils, Using 5.5 lb. (2.5 Kg) Rammer and 12-inch (304.8 mm) Drop (Standard Proctor).
    3. D 1556 Test for Density of Soil in Place by the Sand Cone Method.
    4. D 1557 Test for Moisture-Density Relations of Soils Using 10-lb. (4.5 Kg) Rammer and 18-inch (457 mm) Drop (Modified Proctor).
    5. D 1559 Test Method for Resistance to Plastic Flow of Bituminous Mixtures using Marshall Apparatus.
    6. D 2167 Test for Density of Soil in Place by the Rubber Balloon Method.
    7. D 2216 Laboratory Determination of Moisture Content of Soil.
    8. D 2487 Classification of Soils for Engineering Purpose.
    9. D 2922 Test for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
    10. D 3017 Test for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
    11. D 4318 Test Plastic Limit, Liquid Limit and Plasticity Index of Soils.
    12. C 25 Chemical Analysis of Limestone, Quicklime and Hydrated Lime.
    13. C 110 Physical Testing for Quicklime and Hydrated Lime, Wet Sieve Method.
    14. C 977 Quicklime and Hydrated Lime for Soil Stabilization.
    15. D3385.09 Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer.
    16. D5093.02 (2008) Standard Test Method for Field Measurement of Infiltration Rate Using Double-Ring Infiltrometer with Sealed-Inner Ring.
  - D. Alabama Department of Transportation (ALDOT) Standard Specifications for Highway Construction, latest Edition.
  - E. City of Huntsville Standard Specifications for Construction of Public Improvements Contract Projects, latest edition.
  - F. State, City, or County Standards and Specifications, or other requirements.

- G. State Law and OSHA requirements regulating construction activities near energized transmission lines.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials from on-site when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups CL, ML, SP, SW, SC, SM, GW, and GP according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 4 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. These soils maybe used within one (1) foot of the proposed roadway subgrade elevations.
  - 1. Liquid Limit: Less than 50.
  - 2. Plasticity Index: Less than 30.
  - 3. Max Dry Density: Greater than 100 PCF.
- C. Satisfactory Soils with restrictions: Soil Classification Groups CH according to ASTM D 2487; free of rock or gravel larger than 4 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. These soils may not be used within the upper one (1) foot of the proposed roadway subgrade elevations.
  - 1. Liquid Limit: Less than 60.
  - 2. Plasticity Index: Less than 35.
  - 3. Max Dry Density: Greater than 100 PCF.
- D. Unsuitable Soils: Soil Classification Groups CH, OH, GC, OL, MH, GM, and PT according to ASTM D 2487, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction. Note that this does not apply to insitu soils.
  - 2. CH soils with the following restrictions:
    - a. Liquid Limit: Greater than 60.
    - b. Plasticity Index: Greater than 35.
  - 3. Fills: Topsoil; Excessive organics and/or deleterious material (greater than 5%); Frozen materials; construction materials; clods of clay and stones larger than 4" (unless otherwise specified); organic material, including silts; and inorganic material including silts which are too wet to be stable, or other materials identified by the Geotechnical Engineer and approved by the Owner.
  - 4. Existing subgrade: Same materials as listed in paragraph 3 above that are not capable of direct support of slabs, pavement and similar items with the possible exception of

improvement by compaction, proof rolling or similar methods as directed by the Geotechnical Engineer and approved by the Owner.

- E. Sub base Material: ALDOT 821: At least 90 percent passing the 1 ½ inch and no more than 35 percent passing a number 200 sieve.
- F. Base Course: ALDOT 825B: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2inch sieve and not more than 12 percent passing a No. 200 sieve.
- G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2inch sieve and not more than 12 percent passing a No. 200 sieve.
- H. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1inch sieve and not more than 8 percent passing a No. 200 sieve.
- I. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2inch sieve and 0 to 5 percent passing a No. 8 sieve.
- J. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1inch sieve and 0 to 5 percent passing a No. 4 sieve.
- K. Sand: ASTM C 33; fine aggregate.
- L. Structural Fill: Satisfactory soils and/or satisfactory soils with restrictions as noted above.
- M. Permanent Pond Liner Material Impervious Fill: Clay soil(Unified Classification of CH) capable of compacting to a dense state with a permeability rate of  $1 \times 10^{-6}$ cm/sec or less (e.g..  $5 \times 10^{-7}$ cm/sec). Maximum particle size of two (2) inches. Soil must have a minimum of 80% passing the #200 sieve.

## 2.2 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefin's or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
  - 1. Survivability: Class 2; AASHTO M 288.
  - 2. Grab Tensile Strength: 157 lbf; ASTM D 4632.
  - 3. Sewn Seam Strength: 142 lbf; ASTM D 4632.
  - 4. Tear Strength: 56 lbf; ASTM D 4533.
  - 5. Puncture Strength: 56 lbf; ASTM D 4833.
  - 6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
  - 7. Permittivity: 0.2 per second, minimum; ASTM D 4491.
  - 8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefin's or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 247 lbf; ASTM D 4632.
3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
4. Tear Strength: 90 lbf; ASTM D 4533.
5. Puncture Strength: 90 lbf; ASTM D 4833.
6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

### 2.3 CONTROLLED LOW-STRENGTH MATERIAL

- A. Controlled Low-Strength Material: Self-compacting, flowable concrete material produced from the following:

1. Portland Cement: ASTM C 150, Type II.
2. Fly Ash: ASTM C 618, Class C or F.
3. Normal-Weight Aggregate: ASTM C 33, 3/8 inch nominal maximum aggregate size.
4. Water: ASTM C 94/C 94M.
5. Air-Entraining Admixture: ASTM C 260.

- B. Produce low-density, controlled low-strength material with the following physical properties:

1. As-Cast Unit Weight: 36 to 42 lb/cu. ft. Insert unit weight range at point of placement, when tested according to ASTM C 138/C 138M.
2. Compressive Strength: 140 psi, when tested according to ASTM C 495.

### 2.4 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.

2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect building structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrade and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

### 3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrade, and from flooding Project site and surrounding area.
- B. Protect subgrade from softening, undermining, washout, and damage by rain or water accumulation.
  1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
  2. Install dewatering system as necessary to keep subgrade dry and convey ground water away from excavations.
  3. Install dewatering systems as necessary to keep utility trenches dry and convey ground water away from excavations.

### 3.3 EXPLOSIVES

- A. Explosives: Obtain written permission from the City of Huntsville Environmental Management and Natural Resources Department before bringing explosives to Project site or using explosives on Project site.
  1. Perform blasting without damaging adjacent structures, property, or site improvements.
  2. Perform blasting without weakening the bearing capacity of rock subgrade and with the least-practicable disturbance to remaining rock.
  3. Any blasting near the TVA transmission line shall be coordinated with TVA, Benny Westmoreland, at 256-851-3450 at least 48 hours in advance of work.

4. Any blasting near the Huntsville Utilities temporary or permanent substations shall be coordinated with Huntsville Utilities, Trent Hall, at 256-652-8620 at least 48 hours in advance of work.
5. Any blasting near the Redstone Arsenal transmission or distribution lines shall be coordinated with Redstone Arsenal Directorate of Public Works, Jerry Robinson, at 256-876-3122 at least 48 hours in advance of work.

### 3.4 EXCAVATION, GENERAL

- A. Prior to commencing work, the contractor shall coordinate with the Owner's on-site representative for Proctor Testing and Atterberg limits at least three (3) days prior to working in an area to allow adequate time for testing.
- B. When working underneath the TVA transmission line, any counterpoise that are uncovered or damaged during excavation shall be repaired/reburied immediately by the contractor at no expense to the Owner.
- C. Unclassified Excavation: Excavate to cut line elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, unsuitable soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
  2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
    - a. 24 inches outside of concrete forms other than at footings.
    - b. 12 inches outside of concrete forms at footings.
    - c. 6 inches outside of minimum required dimensions of concrete cast vertically against grade.
    - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
    - e. 24 inches beneath bottom of concrete slabs-on-grade.
    - f. 12 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

### 3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to elevations and dimensions indicated in 1.4 Definitions Item E above within a tolerance of plus or minus one (1) tenth of a foot. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
  2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or

minus 1 tenth of a foot. Do not disturb bottom of excavations intended as bearing surfaces.

B. Excavations at Edges of Tree and Plant Protection Zones:

1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

3.6 EXCAVATION FOR PAVEMENTS

- A. Excavate surfaces under pavements as indicated in 1.4 Definitions E. above to the lines, cross sections, elevations, and subgrades within a tolerance of plus or minus one (1) One tenth of a foot.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

1. Clearance: 12 inches each side of pipe or conduit.

- C. Trench Bottoms: Excavate trenches four (4) inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

1. Excavate trenches eight (8) inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

- D. Trenches in Tree and Plant Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.

3.8 SUBGRADE INSPECTION

- A. Notify Owner's on-site representative when excavations have reached required subgrade.

- B. If it is determined that unsatisfactory soil is present, notify the Owner's on-site representative immediately before continuing excavation. Once approval is given by the Owner's on-site

representative, replace with compacted backfill or fill material as directed and per these specifications.

- C. Proof-roll cut line below the building slabs and pavements with a pneumatic-tired and loaded 10wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
  - 1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
  - 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the Owner's on-site representative and notify the Project Manager or Owner immediately before continuing excavation. Once approval is given by the Project Manager or Owner, replace with compacted backfill or fill material as directed and per these specifications.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner's on-site representative, without additional compensation.

### 3.9 UNAUTHORIZED EXCAVATION

- A. Unauthorized excavation shall be properly filled without additional compensation to the contractor. Lean concrete fill, with 28day compressive strength of 2500 psi, may be used when approved by Owner's on-site representative.
  - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Owner's on-site representative.

### 3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
  - 2. Provide temporary seeding, mulching and silt fencing to eliminate erosion and control sediment.

### 3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade.
  - 2. Allowing the Project Manager or Owner to survey locations of underground utilities for as-built drawings.

3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.

- B. Place backfill on subgrades free of mud, frost, snow, or ice.

### 3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits per Section 107 and 527.
- C. Backfill voids with satisfactory soil while removing shoring and bracing.
- D. Place and compact initial backfill of bedding material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
  1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- E. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- F. Install detectable warning tape directly above utilities, 18 inches above pipe.

### 3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  1. Under pavements, use satisfactory soil material.
  2. Under future building, use satisfactory soil material.
- C. Place soil fills on subgrades free of mud, frost, snow, or ice.
- D. Both soil moisture content and soil density shall be met for fill placement approval.
- E. When working underneath the RSA transmission line, a conductor to ground clearance of twenty-four (24) feet must be maintained at all times. The contractor will be liable for any damage to RSA property and/or electrical outages caused by their work.

### 3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.
3. Utilize lime at three (3) percent to six (6) percent to help speed up soil drying. The actual amount of lime will be determined by a laboratory testing program.
4. Pond Liner material shall be maintained at the moisture content required to achieve the minimum permeability until the pond is filled. Soil moisture contents % range from 0% below to 4% above optimum moisture content.

**3.15 COMPACTION OF SOIL BACKFILLS AND FILLS (excludes trench backfill – see 3.12 above)**

- A. Place backfill and fill soil materials in layers eight (8) to ten (10) inches in loose depth for material compacted by heavy compaction equipment, and not more than four (4) inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
  1. Under structures, future building pads, and pavements, scarify and re-compact top twelve (12) inches of existing subgrade and each layer of backfill or fill soil material at 98 percent and within +/- 2% of optimum moisture.
  2. Under mass graded areas, scarify and re-compact top twelve (12) inches below subgrade and compact each layer of backfill or fill soil material at 98 percent and within +/- 2% of optimum moisture.
  3. For Pond Liner, compact soils to a minimum of 98 percent, at 0% below optimum moisture content to 4% above optimum moisture content. (Note: Some soils may require compaction at 2% above optimum or higher to achieve the required permeability.)

**3.16 GRADING**

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  1. Provide a smooth transition between adjacent existing grades and new grades.
  2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the tolerances listed in 3.5, 3.6, and 3.7.
- C. Grading inside future Building Lines: Finish subgrade to a tolerance of one tenth of a foot.
- D. Grade cut slopes as follows:

1. From the crest and proceed downward.
2. The toe and crest should be accurately located in the field prior to construction.
3. Routinely check grades along the slope face to verify that the slope is per plan.
4. Promptly vegetate the slope and do not allow storm water to drain over the face.

### 3.17 SUBSURFACE DRAINAGE

- A. Subsurface Drain: Place subsurface drainage geotextile around perimeter of sub drainage trench. Place a six (6) inch course of filter material on subsurface drainage geotextile to support sub drainage pipe. Encase sub drainage pipe in a minimum of twelve (12) inches of filter material, placed in compacted layers six (6) inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least six (6) inches.
  1. Compact each filter material layer to 90 percent of maximum dry unit weight according to ASTM D 698.
- B. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within twelve (12) inches of final subgrade, in compacted layers six (6) inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
  1. Compact each filter material layer to 90 percent of maximum dry unit weight according to ASTM D 698.
  2. Place and compact impervious fill over drainage backfill in six (6) inchthick compacted layers to final subgrade.

### 3.18 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place base course under pavements and walks as follows:
  1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
  2. Place base course material over sub base course under hot-mix asphalt pavement.
  3. Shape base course to required crown elevations and cross-slope grades.
  4. Place base course six (6) inches or less in compacted thickness in a single layer.
  5. Place base course that exceeds six (6) inches in compacted thickness in layers of equal thickness, with no compacted layer more than six (6) inches thick or less than three (3) inches thick.
  6. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 98 percent of maximum dry unit weight according to ASTM D 698.
- C. Pavement Shoulders: Place shoulders along edges of base course to prevent lateral movement. Construct shoulders, at least twelve (12) inches wide, of satisfactory soil materials and compact simultaneously with each base layer to not less than 98 percent of maximum dry unit weight according to ASTM D 698.

### 3.19 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
  - 2. Determine that fill material and maximum lift thickness comply with requirements.
  - 3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.
- B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by the Owner's on-site representative.
- E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable and in-place infiltration rates according to ASTM D3385.09 and/or D5093.02 (2008), as applicable. Tests will be performed at the following locations and frequencies:
  - 1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 5,000 sq. ft. or less of paved area, but in no case fewer than three (3) tests.
  - 2. Mass Graded Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 10,000 sq. ft. or less of mass graded area, but in no case fewer than two (2) tests.
  - 3. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length, but no fewer than two (2) tests.
  - 4. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 200 feet or less of trench length, but no fewer than two (2) tests.
  - 5. In Place Pond Liner: At each compacted fill and backfill layer, at least one test for every 10,000 sq. ft. or less of in-place pond liner area, but in no case fewer than two (2) tests.
- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; re-compact and retest until specified compaction is obtained.

### 3.20 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by the Owner's on-site representative; reshape and re-compact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### 3.21 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Stockpile surplus satisfactory soils, including low permeability clays and topsoil at a location designated by the Owner's on-site representative.
- B. Remove surplus waste materials, including trash, and debris, and legally dispose of them off Owner's property.

END OF EARTHWORK

## SECTION - LANDSCAPE

### PART 1.- GENERAL

#### 1.1 DESCRIPTION OF WORK

- A. Extent of landscape development work is shown on drawings and in schedules.
- B. Provide and furnish all labor, materials and equipment required or inferred from drawings and specifications to complete the work of this section.
- C. Subgrade Elevations: Refer to civil plans provided by Owner required to establish elevations as included in this contract.

#### 1.2 QUALITY ASSURANCE

##### A. Reference Standards:

- 1. Standardized Plant Names, latest edition, by the American Joint Committee on Horticultural Nomenclature.
- 2. American Standard for Nursery Stock, latest edition, by the American Association of Nurserymen.

##### B. Source Quality Control:

- 1. General: Only plants grown in a recognized nursery in accordance with good horticultural practice will be accepted. Contractors must get approval from the Landscape Architect for any other nurseries prior to the bid date and time for consideration. If trees and plant material are not available from these approved nurseries, it shall be mentioned prior to the bid date and time. The following are pre-approved sources and plant material **MUST** be sourced and priced from these nurseries:
  - a) Bold Spring Nursery  
770-267-9196
  - b) Classic Groundcovers  
800-248-8424
  - c) Merritt Brothers  
800-648-2006
  - d) Select Tree  
706-769-9879
  - e) Green Ridge Tree Farm  
205-612-1430
  - h) Hunter Trees  
256-268-5890
- 2. Provide healthy, vigorous stock free of purple nut sedge, disease, insects, eggs, larvae, and defects such as knots, sunscald, injuries, abrasions, or disfigurement.
- 3. Inspection of plant material prior to digging: Contractor must locate all plant material to be supplied for the job and inform Landscape Architect in writing of location at least ten (10) days prior to digging. In the event plant material is found to be unacceptable, the Contractor will pursue other sources until acceptable plant material is found, at no additional cost to the Owner.

4. Ship landscape materials with certificates of inspection required by governing authorities. Inspection by Federal and/or State Governments at Grower does not preclude rejection of plants at the site by the Landscape Architect. Comply with regulations applicable to landscape materials. Prepare plants for shipment to prevent damage to the plants.
- C. Do not make substitutions: If specified landscape material is not obtainable, submit to Landscape Architect proof of non-availability and proposal for use of equivalent material. For proof of non-availability submit a written statement from a minimum of twelve (12) reliable Nursery Sources (American Nurserymen's Association Members) that the plant in question is not obtainable in the Eastern United States.
- D. Analysis and Standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.
- E. Topsoil: Contractor shall engage a reputable laboratory to include testing and analysis of stockpiled topsoil on site. In the report, list fertilization and soil amendment recommendations to insure vigorous growth for all plants specified.
- F. Approval and Selection of Materials and Work: The selection of all materials and the execution of all operations required under the specifications and drawings are subject to the approval of the Landscape Architect and the Owner. They have the right to reject any and all materials and any and all work, which in their opinion, does not meet the requirements of the Contract Documents at any stage of the operations. The Contractor shall remove rejected work and/or materials from job site and replace promptly.

### 1.3 SUBMITTALS

- A. Certification: Prior to acceptance of plant material, submit certificates of inspection as required by governmental authorities, and manufacturer's or vendors certified analysis for soil amendments and fertilizer materials. Submit other data substantiating that materials comply with specified requirements. Submit seed vendor's certified statement for each grass seed mixture required, stating botanical and common name, percentage by weight, and percentages of purity, germination, and weed seed for each grass seed species.
- B. Planting Schedule: Submit planting schedule showing scheduled dates for each type of planting in each area of site, prior to beginning of the work.
- C. Maintenance Instructions: Upon completion of the installation, submit typewritten recommendations for maintenance of any portion of the landscape, which in the opinion of the Contractor, requires special attention.
- D. Soil Report: Submit results of laboratory soil tests and sample of recommended soil mix one week prior to beginning of the work.
- E. Approval: Obtain approval from Landscape Architect for all submittals prior to beginning of work, unless otherwise noted.

### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. **Packaged Materials:** Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at site. (Plants shall not be transported in temperatures below twenty degrees (20°) Fahrenheit.)
- B. **Trees, Shrubs, and Ground Cover:** Provide freshly dug trees and shrubs. Do not prune prior to delivery. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches, or destroy natural shape or trees will be rejected. Provide protective covering during shipment.
- C. Deliver trees, shrubs, and ground cover after preparations for planting have been completed and plant immediately. Do not store plant material on site more than 30 days. If planting is delayed more than six (6) hours after delivery, set trees, shrubs, and ground cover in shade, protect from weather and mechanical damage, and keep roots moist.
- D. Do not remove container grown stock from containers until planting time.
- E. Label at least one (1) tree and one (1) shrub of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.
- F. Do not remove labels attached to plant material by the Landscape Architect until directed to do so.

#### 1.5 JOB CONDITIONS

- A. Insurance on plant material and other materials stored or installed is the responsibility of the Landscape Contractor. Such insurance shall cover fire, theft, and vandalism. Should the Contractor elect not to provide for such insurance, he will in no way hold the Owner responsible for any losses incurred by the aforementioned acts. The Landscape Contractor is responsible for all costs incurred in replacing damaged or stolen materials prior to provisional acceptance of the work.
- B. Proceed with and complete landscape work as rapidly as portions of site become available, working within seasonal limitations for each kind of landscape work required.
- C. **Existing Utilities:** Determine location of underground utilities. Perform work in a manner which will avoid possible damage. Excavate as required. Maintain grade stakes set by others, unless removal is mutually agreed upon by parties concerned. All damage to utilities resulting from work covered in these specifications will be repaired at the Contractor's expense.
- D. **Excavation:** When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Landscape Architect in writing before planting.
- E. **Planting Time:** Plant or install materials during suitable weather conditions.
- F. **Planting Schedule:** Prepare a proposed planting schedule. Schedule dates for each type of landscape work during contract period. Coordinate schedule with all other contractors and Irrigation Contractor.

- G. All temporary grassed area shall be killed and removed prior to beginning landscape work. All permanent grass areas disturbed during landscape work shall be re-seeded with grass mix to match.

## 1.6 WARRANTY

- A. Warranty all trees, shrubs, and groundcover for a period of one (1) year from the date of substantial completion, against defects including death and unsatisfactory growth, in the opinion of the Landscape Architect and/or the Owner, except for defects resulting from neglect by Owner abuse or damage by others, or unusual phenomena or incidents, which are beyond Landscape Contractor's control. Should questions arise concerning responsibility of replacement the Landscape Architect will be available for arbitration provided the Owner and Landscape Contractor mutually desire.
- B. Replacement of damaged plant material due to acts of God such as tornadoes, hurricanes, killing freeze or other factors beyond the Landscape Contractor's control should be negotiated by the Owner and the Landscape Contractor. The Landscape Architect will be available for arbitration provided the Owner and Landscape Contractor mutually desire.
- C. Remove and replace all trees, shrubs, and groundcovers, or other plants found to be dead or in unhealthy condition during warranty period as determined by Landscape Architect or Owner. Make replacements as soon as weather conditions permit.
- D. Replacements: Match adjacent specimens of same species. Replacements are subject to all requirements stated in this specification and subject to inspection by the Landscape Architect prior to digging.
- E. Repair grades, paving, and any other damage resulting from replacement planting operations, at no additional cost to the Owner.
- F. Inspect jobsite monthly during warranty period to determine what changes, if any, should be made in the maintenance program. Submit all recommended changes in writing to the Landscape Architect and the Owner.

## PART 2 - PRODUCTS

### 2.1 TOPSOIL

- A. Contractor shall backfill all planting beds to 6" depth and sod areas to 4" depth of topsoil, as required. Contractor shall remove all clay lumps, brush, weeds and other litter, and roots, stumps, stones larger than two inches (2") in any dimension, and other extraneous or toxic matter harmful to plant growth.

### 2.2 SOIL AMENDMENTS

- A. Lime: Natural limestone containing not less than eighty-five percent (85%) of total carbonates, ground so that not less than ninety percent (90%) passes a ten (10) mesh.
- B. Forest or Peat Humus: Air-dried, shredded, and pH range suitable for intended horticultural use.

- C. Bonemeal: Commercial, raw, finely ground; four percent (4%) nitrogen and twenty percent (20%) phosphoric acid.
- D. Superphosphate: Soluble mixture of treated minerals; twenty percent (20%) available phosphoric acid.
- E. Commercial Fertilizer: Complete fertilizer of neutral character, with some elements derived from organic sources and containing following percentages of available plant nutrients:
  - 1. For trees and shrubs, provide fertilizer with not less than ten percent (10%) available phosphoric acid and from three percent (3%) to five percent (5%) total nitrogen and from three percent (3%) to five percent (5%) soluble potash.

### 2.3 PLANTING SOIL

- A. Provide planting soil mix amended as per laboratory recommendations. Basic planting soil mix consists of:
  - (7) parts topsoil
  - (2) parts humus (forest or peat)
  - (1) part mushroom compost, flowers only
  - (1) part sand
 Fertilizer as recommended  
 Cotton seed meal as recommended  
 Lime as recommended

### 2.4 PLANT MATERIALS

- A. General:
  - 1. Provide plants true to species and variety, complying with recommendations of ANSI Z60.1 "Standard for Nursery Stock".
  - 2. Specific requirements concerning plant material and the manner in which it is to be supplied are shown on the drawings and plant list.
  - 3. Acclimatization: Plants must have grown under climatic conditions (temperature extremes similar to those of the locality of the project site for a minimum of two (2) years immediately prior to being planted on the job).
- B. Quality and Size:
  - 1. Furnish nursery grown plants, freshly dug, normally shaped and well branched, fully foliated when in leaf and with healthy well developed root systems. Plants to be free of insect infestations or their eggs and purple nut sedge.
  - 2. Furnish plants to match as closely as possible whenever symmetry is called for.
  - 3. Provide trees and shrubs of sizes shown or specified. Trees and shrubs of larger size may be used if acceptable to the Landscape Architect, and if sizes of roots or rootballs are increased proportionately. The increased size will not result in additional cost to the Owner.
  - 4. Stock specified in a size range: Within each size range not less than fifty percent (50%) of the plants must be of the maximum size specified.
  - 5. Balled and Burlapped Plants: Plants designated "B&B" are to have firm, natural balls of soil corresponding to sizes specified in ANSI Z60.1 "Standard for Nursery Stock". Balls to be firmly wrapped in burlap and securely tied with

heavy twine, rope or wire baskets. Plants with loose, broken or manufactured rootballs will be rejected. Rootballs shall be lifted from the bottom only, not by stems or trunks.

6. Container grown plants in cans or plastic containers will be acceptable in lieu of balled and burlapped plants provided that they meet size and caliper specified. The container must be removed prior to planting, care being exercised as to not injure the plant.

C. Trees:

1. Provide trees of height and caliper listed or shown and with branching configuration recommended by ANSI Z60.1 for type and species required. Provide single stem trees except where special forms are shown or listed.
2. Provide self-supporting trees with straight trunks and leaders intact.
3. Determining dimensions for trees are caliper, height and spread. Caliper is measured six inches (6") above ground for trees up to and including four-inch (4") caliper. Trees over four-inch (4") caliper measure twelve inches (12") above ground. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to tip. Take measurements with branches in normal position.
4. Tree Forms: Do not limb up tree forms more than two feet (2') before planting. Prune to desired shape as directed by Landscape Architect.

- D. Ground Cover: Provide plants established and well-rooted in removable containers or integral peat pots and with not less than minimum number and length of runners by ANSI Z60.1 for the pot size shown or listed.

- E. Grass Sod: Provide fresh, clean, new-crop Empire Zoysia sod complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide sod of grass species, proportions, and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified.

- F. Seed and Mulch: Shall be per ALDOT Specifications Section 652 and 656 and per the City of Huntsville Standard Specifications Section 653 and 659.

## 2.5 MISCELLANEOUS LANDSCAPE MATERIALS

- A. Burlap for wrapping earthball to be jute mesh not less than seven (7) pounds and two (2) ounces per square yard.
- B. Stakes and deadmen: No. 2 or better uniform grade pressure treated pine LP-22, or sound new hardwood or redwood free of knot holes and other defects.
- C. Anchors: No. 3 or No. 4 rebars or comparable size steel stakes.
- D. Guys and Wire Ties: Two-strand, twisted, pliable galvanized steel wire not lighter than No. 10 gauge.
- E. Hose: One-half inch (1/2") diameter black reinforced rubber or plastic garden hose, cut to required lengths to protect tree trunks from damage by wires. Used hose is acceptable.
- F. Wrapping: Tree wrap tape not less than four inches (4") wide, designed to prevent borer damage and winter freezing.

- G. Soil separator: Rot resistant polypropylene filters fabric, water permeable, and unaffected by freeze-thaw.
- H. Drainage Gravel: Clean No. 57 crushed stone.
- I. Mulch: Pine Straw - clean, fresh and free of branches, cones, foreign matter, insects and disease.
- J. Anti-Erosion Mulch: Clean, threshed straw of wheat, rye, oats or barley.
- K. Anti-Desiccant: Emulsion type, film-forming agent designed to permit transpiration but retard excessive loss of moisture from plants. Deliver in manufacturer's fully identified containers and mix in accordance with manufacturer's instructions.
- L. Recognized Tree Paint: Color gray.
- M. Pre-emergent Herbicide: Use appropriate herbicide for specific planting and season with approval of Landscape Architect. Deliver in manufacturer's fully identified containers and mix in accordance with manufacturer's instructions.

## PART 3- EXECUTION

### 3.1 PREPARATION

#### A. General:

1. Contractor must examine conditions under which planting is to be installed. Review applicable architectural and engineering drawings, and be familiar with alignment of underground utilities before digging.
2. Planting time: Planting operations are to be performed at such times of the year as the job may require, with the stipulation that the Contractor guarantees the plant material as specified herein. Plant only during periods when weather conditions are suitable.
3. Layout individual tree and shrub locations and areas for multiple plantings. Stake locations and outline areas and secure Landscape Architect's acceptance before start of excavation for planting work. Make adjustments as may be requested.
4. Notify Landscape Architect of adverse sub-surface drainage or soil conditions. State conditions and submit a proposal for correction including costs. Obtain approval for method of correction prior to continuing work in the affected area. In the event that alternate locations are selected, the contractor will prepare such areas at no additional expense to the Owner.

### 3.2 EXCAVATION

#### A. Excavation for Trees and Shrubs:

1. Excavate pits, beds and trenches with vertical sides, as specified and as shown on the drawings.
2. Loosen hardpan and moisture barrier to a depth of two feet (2') minimum below the bottom of the tree pit or until hardpan has been broken and moisture is

allowed to drain freely. For shrub beds, loosen hardpan six-inch (6") minimum below bottom excavation.

3. For balled and burlapped (B&B) trees and shrubs, make excavations at least half again as wide as the ball diameter and equal to the ball depth, plus an allowance for setting of ball on a layer of compacted backfill. Allow for six inch (6") minimum setting layer of planting soil mixture.  
For container grown stock, excavate as specified for balled and burlapped (B&B) stock, adjusted to size of container width and depth.

B. Test Drainage:

1. Tree pits: Fill each tree pit with water. If percolation is less than fifty percent (50%) within a period of twelve (12) hours, drill a twelve-inch (12") auger to a depth of four feet (4') below the bottom of the pit. Fill augured pit with No. 57 stone and cover with soil separator. Retest percolation in pit.
2. Shrub and groundcover beds: Spot test shrub and groundcover beds.

- C. Dispose of subsoil removed from landscape excavations. Do not mix with planting soil, use as backfill or use to construct saucers around plant pits.

### 3.3 PREPARATION OF PLANTING SOIL

- A. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.
- B. Mix specified soil amendments and fertilizers with topsoil at rates specified. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.
- C. For pit and trench type backfill, mix planting soil prior to backfilling.
- D. For planting beds, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting:
  1. Mix lime, if required, with dry soil prior to mixing of fertilizer.
  2. Prevent lime from contacting roots of acid-loving plants.
  3. Apply phosphoric acid fertilizer (other than that constituting a portion of complete fertilizers) directly to subgrade before applying planting soil and tilling.

### 3.4 SEASONAL COLOR

A. Preparation:

1. Prepare planting soil mix as specified.
2. Add six (6) inches of planting soil mix to excavated bed and roto-till into existing soil.
3. Add sufficient planting soil mix to raise entire bed six (6) inches above original grade.
4. Roto-till entire bed to a depth of eighteen (18) inches.

B. Planting:

1. Plant seasonal color as specified and at indicated spacing shown on plans.

- a. To prepare for tulips: Excavate bed eight (8) inches below finish grade. Evenly spread 12-4-8 fertilizer at thirteen (13) pounds per one hundred (100) square feet on surface of seasonal color planting soil mixture. Rake to mix in with soil mixture. Place bulbs and back fill with soil mix to finish grade.
  - b. To prepare for pansies: Bring plant bed to finish grade with planting soil mix. Evenly spread 6-12-12 fertilizer at thirteen (13) pounds per one hundred (100) square feet and rake to mix in with soil.
  - c. To prepare for summer annuals: Bring plant bed to finish grade with planting soil mix. Evenly spread 14-14-14 (Osmocote) fertilizer at thirteen (13) pounds per one hundred (100) square feet and rake to mix in with soil.
2. Edge seasonal color bed and mulch as specified.
  3. Water thoroughly.

### 3.5 PLANTING TREES AND SHRUBS

- A. Set balled and burlapped (B&B) stock on layer of compacted planting soil mixture, plumb and in center of pit or trench with top of ball two inches (2") to three inches (3") above the finish grade and also two inches (2") to three inches (3") above the grade they bore to natural grade before transplanting. Remove burlap from sides of balls; retain on bottoms. Remove all wire and ropes from rootball. Use planting soil mixture to backfill plant pits. When plants are set, place additional backfill around base and sides of ball, and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately two-thirds (2/3) full, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill.
- B. Set container grown stock as specified for balled and burlapped stock, except cut cans on two sides with an approved can cutter and remove bottoms of wooden boxes after partial backfilling so as not to damage rootballs.
- C. Disk top of backfill to allow for mulching.
- D. Form shallow saucers to the finished grade outside the tree pit approximately four-inch (4") height, capable of holding water about each plant by placing a mound of topsoil around the edge of each filled-in pit.
- E. Apply anti-desiccant using power spray to provide an adequate film over trunks, branches, stems, twigs and foliage. If deciduous trees or shrubs are moved in full leaf, spray with anti-desiccant at nursery before moving and again after planting as per manufacturer's recommendations.
- F. Mulching Pine Straw: Immediately after planting work has been completed, mulch pits, trenches and planting beds. Provide not less than three inch (3") thickness of mulch. Finish edges according to detail.
- G. Water: Soak all plants immediately after planting, continue watering thereafter as necessary until acceptance of the work in total.
- H. Smooth planting areas to conform to specified grades after full settlement has occurred and mulch has been applied.

### 3.6 STAKING, GUYING AND PRUNING

- A. Stake and guy trees immediately after planting. Plants shall be plumb after staking or guying. Maintain stakes, wires and guys until acceptance of the work in total. Staking of trees in parking lot islands are an exception to this section.
- B. Staking trees of one-inch (1") to three-inch (3") caliper: Drive stakes securely into ground and fasten to tree with wire and tie. Use hose around wire so wire is not in contact with plant. Adhere to staking details unless alternate detail has been approved by Landscape Architect prior to beginning of planting operation.
- C. Staking trees of one-inch (1") and under or four feet (4') height: Use single stake with rubber hose and wire loop around trunk.
- D. Guy trees according to detail. Position guys around trunk at approximately two-fifths (2/5) the height of the tree. Anchor guys in ground either to notched stakes or steel rods driven securely into ground with top end three inches (3") below finish grade.
- E. Pruning: Unless otherwise directed by the Landscape Architect do not cut tree leaders, and remove only injured or dead branches from trees, if any. Prune shrubs at the direction of the Landscape Architect.
- F. Remove and replace promptly any plants pruned or misformed resulting from improper pruning.
- G. Paint wounds and cuts over three-quarter inches (3/4") in diameter with approved tree paint designed for this purpose. Cover all exposed living tissue.
- H. Wrap tree trunks of two inch (2") caliper and larger. Start at ground and cover trunk to height of first branches and securely attach. Inspect tree trunks for injury, improper pruning and insect infestation and take corrective measures before wrapping.

### 3.7 INSTALLING LAWNS

- A. Sodding New Lawns:
  - 1. Water soil prior to receiving sod.
  - 2. Lay sod within twenty-four (24) hours from time of stripping. If not possible, sod may be stored on site up to thirty-six (36) hours after stripping, provided sod is properly protected: unstack, unroll, and place in shade and keep moist until installation.
  - 3. Do not lay dormant sod.
  - 4. Do not lay sod on frozen ground.
  - 5. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to subgrade or sod. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass.
  - 6. Anchor sod on slopes with wood pegs to prevent slippage. Lay sod perpendicular to slope direction.
  - 7. Water sod thoroughly with a fine spray immediately after planting until soil is damp to a depth of four inches (4").

B. Sowing Turf Grass:

1. Preparation
  - a. Grade seedbeds, thoroughly removing ridges and depressions, and making areas smooth, continuous and firm planes that ensure positive drainage. Preparation and grading to be approved by Landscape Architect prior to seed sowing.
  - b. Remove soil lumps, rocks, sticks and other deleterious material.
2. Sowing with a seeder approved for that purpose by the Landscape Architect.
  - a. Sow grass seed at the rate of 2 pounds per one thousand (1,000) square feet.
  - b. Rake seed lightly into top one-eighth inch (1/8") of soil, roll lightly and water with a fine spray.
  - c. Protect seeded areas against erosion by spreading lawn mulch of hay after seeding. Spread uniformly to form a continuous blanket not less than one and one-half inch (1-1/2") loose measurement over seeded area.
  - d. Keep area moist throughout the germination period.

3.8 MAINTENANCE

- A. Begin maintenance immediately after planting.
- B. Maintain trees, shrubs and other plants until substantial completion.
- C. Maintain trees, shrubs and other plants by watering, pruning, cultivating, weeding, and re-mulching as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease.

3.9 CLEAN UP AND PROTECTION

- A. During landscape work, keep pavements clean and work area in an orderly condition.
- B. Upon completion of work, clear grounds of debris, superfluous materials and all equipment. Remove from site to satisfaction of Landscape Architect and Owner.
- C. Protect landscape work and materials from damage due to landscape operations, operations by other contractors and trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed, at no additional cost to the Owner.
- D. Theft: Landscape Contractor is responsible for theft of plant material at the job site before, during and after planting, until the date of provisional acceptance of the work in total.

3.10 INSPECTION, ACCEPTANCE, RETAINAGE AND PAYMENT

- A. Progress Payments may be applied for pertaining to installed work only.
- B. Upon completion of work, notify Landscape Architect and Owner at least ten (10) days prior to requested date of inspection for provisional acceptance. Where inspected

landscape work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by Landscape Architect and found to be acceptable. Remove rejected plants and materials promptly from project site.

- C. Upon satisfactory completion of repairs and/or replacements, the Landscape Architect certifies, in writing, the provisional acceptance of the work in total.
- D. Final Acceptance: One year after provisional acceptance of the work in total the Landscape Architect and the Owner inspect the work for final acceptance. Upon satisfactory completion of repairs and/or replacements the Landscape Architect certifies, in writing, the final acceptance of the work.
- E. All planting and plant material required in these specifications must be in satisfactory condition and accepted by the Landscape Architect when the Contractor applies for final payment.
- F. Approval of Final Acceptance is evidence of completion and acceptance of the work required in these specifications. Payment made by the Owner to the Contractor pursuant to the issuance of Final Acceptance Certificate shall be deemed to be accepted by all parties hereto as the final payment for the work specified herein.

END OF LANDSCAPE

## SECTION - STONE PAVERS

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. Cut stone pavers mortared on cementitious setting bed on concrete slab.

#### 1.2 REFERENCES

- A. ASTM - American Society of Testing Materials:
  - 1. ASTM C270 Standard Specification for Mortar for Unit Masonry.
  - 2. ASTM C615 Standard Specification for Granite Dimension Stone.
  - 3. ASTM D2103 Standard Specification for Polyethylene Film and Sheeting.

#### 1.3 REGULATORY REQUIREMENTS

- A. Comply with all applicable Codes and with the requirements of agencies having jurisdiction over the work of this Section.

#### 1.4 QUALITY ASSURANCE

- A. Stone Fabricator: Company specializing in cut stone fabrication and with minimum ten (10) years documented satisfactory experience,
- B. Installer: Company specializing in performing work of this Section with minimum (10) years of documented satisfactory experience on comparable projects.

#### 1.5 SUBMITTALS FOR REVIEW

- A. Shop Drawings: Indicate layout, pertinent dimensions and details, control and expansion jointing methods.
- B. Product Data: Provide data on paver units, mortar products, sealants, and all items necessary for complete installation.
- C. Samples: Submit two stone samples 12x12 inches in size, illustrating color range and texture, markings, and surface finish for each product specified.
- D. Samples: Submit mortar color samples.

#### 1.6 MOCK UP IN PLACE

- A. Size: 100 sq. ft.
- B. Install setting bed, stone pavers, and mortar, and accessories to pattern indicated.
  - 1. Show range of shades, color, and texture of pavers.
- C. Mock-up may remain as part of the Work if accepted by Landscape Architect and Owner

#### 1.7 SUBMITTALS FOR INFORMATION

- A. Submit stone fabricator's installation instructions and field erection or setting drawings

#### 1.8 DELIVERY, STORAGE, AND PROTECTION

- D. Provide ventilation to prevent condensation from forming on stone.

#### 1.9 COORDINATION

- A. Coordinate work with Sections providing substrates and support work.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURER

- A. Standard of Quality:
  - 1. Random broken crab orchard pattern Flagstone are products of Garner Stone, Birmingham, Alabama or equal.

#### 2.2 STONE

- A. Flagstone, Pennsylvania, Bluestone, saw cut w/ split face.

#### 2.3 STONE SIZES

- A. Flagstone: Random & irregular 4" to 24" max x 2" thick pattern per drawings.

#### 2.4 CEMENTITIOUS BEDDING MATERIALS

- A. Portland Cement: ASTM C150, Type I; gray color.
- B. Sand: ASTM C144; sharp, coarse, clean, screened; sand free from deleterious material.
- C. Water: Potable and not detrimental to mortar.
- D. Admixtures: Air entrainment to achieve 5-7 percent.
- E. Mortar Color: Mineral oxide type, non-fading, color as specified by Landscape Architect.

#### 2.5 MIXES

- A. Cementitious Bed: Portland cement mix conforming to the following: 1 part cement, 6 parts damp sand by volume.
- B. Grout: Latex – Portland Cement mix conforming to ANSI A118.4.
- C. Thoroughly mix ingredients in quantities required for immediate use.
- D. Use within two hours after mixing. Do not re-temper thereafter.

#### 2.6 ACCESSORIES

- A. Reinforcing: 6 x 6 x 8/8 Welded Wire Mesh (in grout).

- B.
- C. Sealant: Urethane, self-leveling and color as selected to match stone color.
- D. Cleaning Solution: Type which will not harm stone, joint materials, or adjacent surfaces.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Visually determine that Project is ready for the work of this Section; beginning work indicates acceptance of conditions.
- B. Verify that items provided and built-in under other Sections are properly located and sized.
- C. Verify substrate is ready to support pavers and imposed loads.
- D. Verify gradients and elevations of prepared base are correct.

#### 3.2 PREPARATION

- A. Clean stone prior to installation. Do not use wire brushes or implements that will mark or damage exposed surfaces.

#### 3.3 INSTALLATION

- A. Place cementitious setting bed of 1" thickness.
- B. Tamp pavers into dry pack bed.
- C. Place paver units in pattern indicated on Plans from straight reference line.
- D. Maintain uniform joint width of 3/8" and where abutting vertical surfaces or protrusions.
- E. Fill control joints with sealant. Neatly tool surface to concave joint.

#### 3.4 CLEANING

- A. Do not clean pavers until pavers and mortar are dry.
- B. Clean soiled surfaces using water or cleaning solution recommended by paver manufacturer. Do not harm pavers, joint materials, or adjacent surfaces.
- C. Use non-metallic tools in cleaning operations.
- D. Rinse surfaces with clean water.
- E. Boom clean paving surfaces.

#### 3.5 PROTECTION

- A. Do not permit traffic over pavers for seven days. Do not permit traffic on unprotected paver surface; cover with plywood if traffic is required.

### 3.6 SCHEDULE

- A. Refer to the Hardscape Drawings for extent of the work of this Section.

**END OF STONE PAVERS**

## SECTION - IRRIGATION SYSTEM

### PART 1 - GENERAL

#### 1.1 DESCRIPTION

- A. Work includes: Provide a shop drawing designed irrigation system as specified herein, and install, complete in place, tested and approved, including but not necessarily limited to:
  - 1. Lawn and shrub sprinkler system
  - 2. Automatic controller and remote control valves
- B. Related work:
  - 1. Documents affecting work of this Section include, but are not necessarily limited to: General Conditions, Supplementary Conditions, and Sections in AIA Document A107.

#### 1.2 QUALITY ASSURANCE

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

#### 1.3 SUBMITTALS

- A. Product data: Within thirty (30) calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
  - 1. Shop drawing of required system to be reviewed and approved by the Landscape Architect.
  - 2. Materials list of items proposed to be provided under this Section;
  - 3. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
  - 4. Manufacturer's recommended installation procedures which, when approved by the Landscape Architect, will become the basis for accepting or rejecting actual installation procedures used for the Work.
  - 5. As-Built Drawings: Any changes in the layout and/or arrangements of the proposed irrigation system, or any other differences between the proposed system and actual installed conditions are to be recorded by the Irrigation Contractor in the form of an "As-Built" drawing. Provide the Owner and the Landscape Architect with a copy of the drawings before work under this Contract will be considered for acceptance. All isolation valve locations shall be shown with actual measurements to reference points so they may be located easily in the field.

#### 1.4 WARRANTY

- A. Warranty all work for a period of two (2) years after date of final acceptance of the work in total, against defects in materials, equipment, workmanship and any repairs required resulting from leaks or other defects of workmanship, material or equipment.

- B. Repair unsatisfactory conditions promptly at no cost to the Owner.
- C. Emergency repairs may be made by the Owner without relieving the Irrigation Contractor of his warranty obligations.
- D. Repair settling of backfilled trenches occurring during the warranty period, including restoration of damaged plantings, paving or improvements resulting from settling of trenches or repair operations.
- E. Respond to Owner's request for repair work within ten (10) days. If not Owner may proceed with such necessary repairs at the Contractor's expense.

## PART 2 - PRODUCTS

### 2.1 PIPE

#### A. Plastic pipe:

- 1. Use three quarter inch (3/4"), one inch (1"), and one and one-half inch (1-1/2") sizes, Schedule 40; two inch (2") and larger, Class 315 polyvinyl chloride bearing the seal of the National Sanitation Foundation, unless otherwise specified by local codes.
- 2. Fittings: Use Schedule 40 polyvinyl chloride, type I-II, bearing the seal of the National Sanitation Foundation, and complying with ASTM D2466.
- 3. Plastic pipe identification: Continuously and permanently mark with manufacturer's name, pipe size, schedule number, type of material, and code number.

#### B. Solvent Cement and Primer:

- 1. Solvent shall be IPS-721 or pre-approved equal.
- 2. Solvent shall be IPS-727 or pre-approved equal, **When temperatures are below 40 Fahrenheit.**
- 3. NOTE: In temperature below 32° Fahrenheit contractor shall not glue any pipe together.
- 4. Primer shall be IPS-70 or pre-approved equal.

### 2.2 Valves

#### A. Electric Remote Control Valves

- 1. Spray Irrigation: 100-PEB.-150-PEB-200-PEB.
- 2. The electric remote control valve shall be a normally closed 24 VAC 50/60 cycle solenoid actuated globe pattern with a balanced pressure diaphragm design. The valve pressure rating shall not be less than 200 PSI.
- 3. The valve shall have a manual open/close control (internal bleed) for manual opening and closing of valve without electrically energizing the solenoid. The valve shall have internal manual bleed to prevent flooding of the valve box. The valve shall house a fully-encapsulated, one-piece solenoid with captured plunger. The 24 VAC 50/60 Hz solenoid shall open with 19.6 VDC minimum at 200 PSI. At 24 VAC average in rush current, it shall not exceed .41 amps. Average holding current shall not exceed .23 amps.

4. The valve shall have a control port filter screen to filter out grit and prevent clogging of hydraulic control parts.
5. The valve shall have a stainless steel flow control stem and cross handle for regulating or shutting off the flow of water. The valve must open or close in less than one minute at 200 PSI and less than 30 seconds at 20 PSI.
6. The valve construction shall be such as to provide for all internal parts to be removable from the top of the valve without disturbing the valve installation.
7. The valve shall be as manufactured by Rain Bird Sprinkler Manufacturing Corporation, Glendora, California, or an approved equal.
8. Drip Irrigation: XCZ-100-PRF or approved equal.

**B. Quick coupling valves:**

1. Provide specified size, one-piece construction, all brass to fit single or double lug couplers.
2. Use Schedule 80 PVC. Pipe nipples and Schedule 40 Street Ells as a three elbow swing joint to permit readjustment of valve angle.
3. Deliver to the Owner the following items, all matching the approved quick coupling valves:
  - a. Coupler keys - quantities as specified
  - b. Hose swivels - quantities as specified
4. Acceptable manufacturers:
  - a. Toro
  - b. Rainbird

**C. Gate valve:**

1. Provide one hundred and twenty-five (125) pound rated screwed valve of size required for the line.
2. Acceptable manufacturers:
  - a. Harvard
  - b. Crane; or approved equal

**2.3 Spray Heads**

**A. Sprinklers**

1. Spray Head
  - a. Sprinklers to be used in beds will be 1812-SAM-PRS-45.
  - b. Sprinklers to be installed in turf will be 1806-SAM-PRS-45.
2. Nozzles shall be MPR Plastic
3. Drip tube shall be LD-09-12-500 only.
4. Rotors
  - a. Small turf areas shall be 3504-PC-SAM-PRS
  - b. Larger turf areas shall be 5006-PL-PC-SAM-PRS.

**2.4 Rain Gauge**

**A. Rain Gauge**

1. W.R.C. Wireless Rain Sensor Combo
  - a. If Maxicom is in use a Rain Can must be used

## 2.5 Control Wire

### A. Location Wire

1. Permanently mark all irrigation lines with 16 GAUGE WIRE. Begin at the control valve and continue to the end of that line for every control valve. Also mark in the same manner beginning at the backflow vault and run in all main line trenches including any wire trenches that may be separate from the main line. When starting a new roll of wire or wire is broken, it must be repaired and covered with an econovalve box. There will be no exceptions to this stipulation.
2. Wire should be Blue in color for lateral lines and yellow for main lines.

### B. Control Valve Wire Splices

1. Splices shall only be made by using 3M-DBY's; all splices will either be made in a control valve box or a 6 inch econo box **only**.

## 2.6 MANUAL AND AUTOMATIC VALVE SLEEVES

A. For manual control valve: Provide flexible plastic sleeve and four inch (4") cyclolac marker.

B. For gate valves:

1. Provide round reinforced plastic boxes with lids, with the word "WATER" cast into the lids.
2. Acceptable manufacturers:
  - a. Ametek

## 2.7 BACKFLOW PREVENTER

A. Contractor shall provide double check type backflow preventer.

1. Approved manufacturer: Watts #700 or approved equal.

## 2.8 OTHER MATERIALS

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

## PART 3 - EXECUTION

### 3.1 SURFACE CONDITIONS

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

### 3.2 FIELD MEASUREMENTS

- A. Make necessary measurements in the field to ensure precise fit of items in accordance with the approved design.

### 3.3 EXCAVATION, TRENCHING AND BACKFILLING

- A. Trench, backfill, and compact in accordance with the detail on the drawings.
- B. All excavation shall be unclassified and shall include all materials encountered.
- C. **It shall be the responsibility of the contractor to provide suitable backfill materials.** This backfill material shall be free from the rocks, large stones, and other unsuitable substances which could damage the pipe or create unusual settling problems. The minimum depth of cover over piping 6" and larger shall be 24". The minimum depth of cover over piping 4" and smaller shall be 18". Backfilling will be done in 6" layers and tamped after each layer is put in to prevent excessive settling **in all lines**.
- D. No cutting of existing asphalt roadways shall be allowed. Contractor shall bore any required crossing of existing roadways in an approved manner.
- E. The contractor shall exercise reasonable care to avoid causing damage to any and all underground utilities and structures.
- F. The Owner shall advise the contractor of any underground utilities or structure of which he is aware. Utility locating services shall be called upon to pinpoint location of any underground utilities on site of the project by the contractor.

### 3.4 INSTALLATION OF PIPING

- A. General:
  - 1. Lay out the piping system in accordance with arrangement shown on the approved Shop Drawings.
  - 2. Unless otherwise indicated, comply with requirements of Uniform Plumbing Code.
- B. Piping depth: Install piping with at least the following minimum depth:
  - 1. Main lines - 18"
  - 2. Laterals - 12"
- C. Plastic pipe:
  - 1. Exercise care in handling, loading, unloading, and storing plastic pipe and fittings:
    - a. Store under cover until ready to install.
    - b. Transport only in a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load.
  - 2. Repair dented and damaged pipe by cutting out and discarding the dented or damaged section, and rejoining with a coupling.

3. Center load plastic pipe with a small amount of backfill to prevent arching and whipping under pressure.
4. For plastic-to-steel connections:
  - a. Work the steel connection first.
  - b. Use Teflon tape on threaded plastic-to-steel connections.
  - c. Use only light wrench pressure.

### 3.5 INSTALLATION OF EQUIPMENT

- A. Install manual and automatic control valves where indicated on the approved Shop Drawings and in accordance with the manufacturer's recommendations as approved by the Landscape Architect.
- B. Quick coupling valves:
  1. Install in lawn areas with the top flush with the finish grade, and eight inches (8") from pavements and heads.
  2. Install in planting areas with tops two inches (2") above grade and eight inches (8") from pavement and heads.
- C. Lawn sprinkler heads:
  1. All lawn areas are to be irrigated by separate zones.
  2. Install where indicated on the approved Shop Drawings and in accordance with the manufacturer's recommendations as approved by the Landscape Architect.
  3. Set heads at finished grade.
- D. Shrub spray heads:
  1. All shrub areas are to be irrigated by separate zones.
  2. Install where indicated on the approved Shop Drawings and in accordance with the manufacturer's recommendations as approved by the Landscape Architect.
  3. Set tops of heads to height prescribed by the Landscape Architect.

### 3.6 TESTING AND INSPECTING

- A. Testing: The following items should be completed after installation but before the irrigation system is covered.
  1. Notify Landscape Architect twenty-four (24) hours prior to pressure test. Unless otherwise instructed, Landscape Architect shall be present at pressure test.
  2. Make necessary provision for thoroughly bleeding the line of air and debris.
  3. After valves have been installed, test live water lines for leaks at a pressure of one hundred fifty (150) psi for a period of two (2) hours, with a five (5) psi pressure loss.
  4. Observe lateral lines for leaks during operation.
  5. Provide required testing equipment and personnel.
  6. Repair leaks, and retest until acceptance by the Landscape Architect.
- B. Final inspection:
  1. Clean, adjust, and balance all systems. Verify that:
    - a. Remote control valves are properly balanced.

- b. Heads are properly adjusted for radius and arc of coverage.
  - c. The installed system is workable, clean and efficient.
- C. **As-Built Drawings:** Any changes in the layout and/or arrangements of the proposed irrigation system, or any other differences between the proposed system and actual installed conditions are to be recorded by the Irrigation Contractor in the form of an "As-Built" drawing. Provide the Owner and the Landscape Architect with a copy of the drawings before work under this Contract will be considered for acceptance. All isolation valve locations shall be shown with actual measurements to reference points so they may be located easily in the field.

### 3.7 INSTRUCTIONS

- A. Attach legible, laminated legend inside each controller door, stating the areas covered by each remote control valve.
- B. After the system has been completed, inspected, and approved instruct the Owner's maintenance personnel in the operation and maintenance of the system.

END OF IRRIGATION SYSTEM

## SECTION - MAINTENANCE

### PART 1- GENERAL

#### 1.1 DESCRIPTION

##### A. Work Included:

1. The Grounds Maintenance Agreement is to include the complete care and guarantee of all planted trees, plants, groundcovers, and sod areas within the limits of work shown on the Landscape Planting Plans.

##### B. Related Work:

1. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of these Specifications.

#### 1.2 QUALITY ASSURANCE

- A. The Maintenance Contractor is hereby made aware that both the Owner and the Landscape Architect anticipate that the Landscape Maintenance at this site shall be of the very highest quality possible.

- B. All work to be performed such as pruning, mowing, fertilizing, watering, weeding, edging, spraying, policing, plant installation, over-seeding, aerating, and mulching shall be strictly managed and executed and performed by experienced personnel.

- C. The Owner shall be insured of a complete maintenance program and plant guarantee for all trees, plants, and mulched areas such that the quality of planting does not deteriorate, but obtains vitality and healthy new growth for the duration of the Agreement.

- D. The Grounds Maintenance Contractor must take every precaution to prevent saturation of the plant material during the life of the Agreement (i.e., diversion swales, installation of underdrains if needed, removal of mulch and tree saucers when necessary, and/or raising distressed plant material when necessary).

##### E. Guarantee of Plant Material:

1. The Grounds Maintenance Contractor guarantees and will replace, at no additional cost to the Owner, 100% of the plants which, in the opinion of the Landscape Architect, fail to maintain a healthy, vigorous condition (excluding theft or vandalism) regardless of the Contractor responsible for the initial installation. Replacement plant material shall meet all specifications as listed in the Landscape Specifications and Plant List in regard to species, variety, color, and quality. Size of replacement plant material shall equal that of the plant which is being replaced and/or the size of existing adjacent like specimens.
2. The Contractor is responsible for "treating" problem plant material and shall outline immediate steps to correct problems or improve performance of the plant.
3. In the event that the performance of the Landscape Maintenance Contractor should fail to satisfy the expectations and standards set forth in this Section of Specifications as interpreted by the Owner and the Landscape Architect, the Owner reserves the right to obtain others to perform such duties and deduct all costs from the Maintenance Contractor's payments.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 1300
- B. Schedule:
  - 1. Prior to beginning work on this contract, the Grounds Maintenance Contractor is to provide the Owner with a detailed schedule of how the work is to be accomplished. The schedule is to include target dates for all work performed under this contract, time estimates for task completion, and anticipated labor forces.

2.0 PRODUCTS

2.1 SOIL ADJUSTMENTS

- A. Soil is to be maintained at the pH levels noted under Landscape of these specifications.
- B. Soil pH adjustments (from Princeton Nurseries "How to Adjust Soil pH"):
  - 1. To raise soil pH one point: Spread ground limestone.

| SOIL TYPE<br>(Per 1000 SF) | LIMESTONE<br>(Per acre) | LIMESTONE  |
|----------------------------|-------------------------|------------|
| Sandy Loam                 | 80 lbs.                 | 1 1/2 tons |
| Loam                       | 110 lbs.                | 2 tons     |
| Clay Loam                  | 120 lbs.                | 2 1/2 tons |

- 2. To lower soil pH one point: Spread powdered sulfur and aluminum sulfate.

| SOIL TYPE<br>SULFUR<br>(Per 1000 SF) | POWDERED<br>SULFUR<br>(Per acre) | POWDERED |
|--------------------------------------|----------------------------------|----------|
| Sandy Loam                           | 7 lbs.                           | 300 lbs. |
| Loam                                 | 10 lbs.                          | 430 lbs. |
| Clay Loam                            | 14 lbs.                          | 600 lbs. |

| SOIL TYPE<br>SULFATE<br>(Per 1000 SF) | ALUMINUM<br>SULFATE<br>(Per acre) | ALUMINUM  |
|---------------------------------------|-----------------------------------|-----------|
| Sandy Loam                            | 50 lbs.                           | 2000 lbs. |
| Loam                                  | 70 lbs.                           | 3000 lbs. |
| Clay Loam                             | 90 lbs.                           | 3500 lbs. |

- 3. Use one-half (1/2) the above applications to lower the pH one point on established plantings (preferably in the dormant season). Cultivate thoroughly, by hand, into the one (1) to two (2) inches of soil above the plant roots, avoiding damage to the root systems.

2.2 APPLICATIONS OF INSECTICIDES AND PESTICIDES

- A. Recommended treatment application. See following chart:

INSECTICIDES AND PESTICIDES  
APPLY AS PER MANUFACTURER'S INSTRUCTIONS

INSECT CONTROL CHART

| NAME OF PEST/<br>(Comments)                                                           | INSECTICIDE                            | HYDRAULIC SPRAYER<br>FORMULA (Per 100<br>Gal. Water) | MIST BLOWER<br>(Per 100 Gal.<br>Water) |
|---------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------|----------------------------------------|
| Aphids<br>(Apply when noticed)                                                        | Malathion                              | 1 qt                                                 | 4 1/2 gal                              |
| Lace Bugs<br>(2 sprays,<br>2-3 wks. apart)                                            | Malathion<br>50% Emulsion              | 1 qt                                                 | 4 1/2 gal                              |
| Leaf Hoppers<br>(Repeat if necessary)                                                 | Methoxychlor                           | 3 lbs                                                |                                        |
| Scale Insects-<br>Crawling Stage<br>(First spray in early June.<br>Repeat in 3 weeks) | Methoxychlor<br>25% E.C.               | 2 qts.                                               | 3 gal                                  |
| Scale Insects-<br>Dormant<br>(Spray only when temp. is above 45 degrees F)            | Superior Type<br>Dormant Oil           | 3 gals.                                              | 5 gal                                  |
| Spider Mites<br>(Two sprays<br>3 wks apart)                                           | Malathion                              | 1 qt                                                 | 4 1/2 gal                              |
| Other Special<br>Miticides                                                            | Manuf. Dir.                            | Manuf. Dir.                                          |                                        |
| Canker Worms<br>(Inch Worms)<br>(While foliage is young)                              | Methoxychlor<br>50% Wettable<br>Powder | 3 lbs.                                               |                                        |

### INSECT CONTROL CHART continued

| NAME OF PEST/<br>(Comments)                                                                         | INSECTICIDE                 | HYDRAULIC SPRAYER<br>FORMULA (Per 100<br>Gal. Water) | MIST BLOWER<br>(Per 100 Gal.<br>Water) |
|-----------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------|----------------------------------------|
| All Other Leaf Eating Caterpillars (When noticed)                                                   | Same as for Canker Worms    |                                                      |                                        |
| Bag Worms (Early to middle June) (When adults emerge)                                               | Diazinon                    | 1 lb.                                                |                                        |
|                                                                                                     | Malathion 50% Emulsion      | 1 qt                                                 | 4 1/2 gal                              |
| Japanese Beetle (When adults emerge)                                                                | Sevin 50% Wettable Powder   | 2 lbs.                                               |                                        |
| Other Leaf-Eating Beetles (When noticed)                                                            | Same as for Elm Leaf Beetle |                                                      |                                        |
| Birch Leaf Miner (When new growth has 4 or 5 leaves showing or when miners are 2/3 in. in diameter) | Malathion 50% Emulsion      | 1 qt                                                 | 4 1/2 gal                              |
|                                                                                                     | Meta-systox-R 25% SC        | 1 1/2 pts                                            |                                        |
| Locust Pod Gall (April when Buds show green)                                                        | Lindane 20% EC              | 1 pt                                                 |                                        |
| Mimosa Web Worms (When first noticed)                                                               | Sevin                       | 2 lbs<br>50% Wettable Powder                         |                                        |

- B. All insecticides and pesticides are to be applied by a person who maintains a valid Alabama insecticide and pesticides applicator and operations license.
- C. All chemicals are to be applied per manufacture recommendation and in strict accordance with federal, state, county, and city directives on environmental control. Chemicals must have an EPA approval number.

### 2.3 APPLICATION OF FERTILIZER

A. Recommended application times and rates:

FERTILIZING SUMMARY

| PLANT TYPE                       | TIME OF APPLICATION                                | FERTILIZER                          | RATE OF APPLICATION                        |
|----------------------------------|----------------------------------------------------|-------------------------------------|--------------------------------------------|
| Shade Trees                      | February                                           | 8-12-12                             | 1 cup/inch<br>in caliper<br>of tree        |
| Ornamental<br>Trees              | March                                              | 8-8-8                               | 1 cup/inch<br>in caliper<br>of tree        |
| Medium<br>Evergreen<br>Trees     | March<br>June                                      | 13-13-13<br>10-10-10                | 1 cup/inch<br>in caliper<br>of tree        |
| Shrubs &<br>Massed<br>Evergreens | March<br>May<br>July                               | 13-13-13*<br>10-10-10*<br>10-10-10* | 1/2 cup/<br>foot in<br>height of scrub     |
| *Granulated Fertilizer           |                                                    |                                     |                                            |
| Groundcover                      | April<br>thoroughly<br>water after<br>application  | 13-13-13                            | 10 lbs./<br>1000 sf                        |
| Lawn Areas                       | March (early)<br>June (early)<br>September (early) | 10-10-10                            | 50 lbs./<br>2500 sf<br>or<br>800 lbs./acre |

PART 3 - EXECUTION

3.1 MAINTENANCE PROCEDURE

A. Planted Trees:

1. **Watering without Irrigation:** When a drought (no rain for 2 or 3 weeks during summer months) occurs, it will be necessary to soak the tree(s). Check all trees and plants weekly, for dryness, by removing the straw from their bases and sampling the soil approximately twelve to fifteen inches (12" -15") deep. If no moisture is present, water each tree until the ground is saturated to the base of the tree rootball or a minimum of thirty-inch (30") depth. Watering Agent: Apply watering agent when the soil has become hardened beyond normal absorption rates, apply per manufacturer's recommendations.

2. Mulch: Maintain a layer of good heavy mulch which is three (3) inches in depth around all trees and shrubs in order to preserve moisture as specified.
3. Fertilizing: All planted trees shall be deep-root fed herein. Feed by boring a one and one-half inch (1-1/2") diameter hole to a depth of twelve to fifteen inches (12' – 15") and at the rate of eight to ten (8" – 10") holes per tree. Use two (2) pounds of material a year per inch in caliper of tree measured six (6) inches off the ground. Backfill all holes and repair any damage resulting from fertilizing operations.
4. Abnormal Conditions: Each tree is to be inspected each week for abnormal conditions such as insects, borers, web worms, red spiders, Japanese beetles, etc. Any abnormal conditions are to be treated immediately following recognized horticultural procedures.
5. Sucker Growth: Remove all sucker growth three (3) times a year. Sucker growth is defined as the shoots that sprout out around the base of a tree trunk.
6. Dead Wood: Remove and/or prune all dead branches a minimum of two (2) times per year. Treat all wounds and cuts with an asphaltic tree wound paint.
7. Insect Control: Apply insecticides as necessary in order to effectively control borers, aphids, mealy bugs, mites, tent worms, etc. Follow manufacturer's recommendations.  
NOTE: All chemicals are to be used in strict accordance with the federal, state, and county directives on environmental control. Chemicals must have an EPA approval number.
8. Leaning Trees: Straighten any leaning trees by pulling them to an upright position and installing a new guy wire and/or stake. If the tree cannot be successfully straightened by pulling over, then the Contractor shall dig around the rootball and straighten. To insure the tree is not damaged in the straightening process, a rubber hose should be used to protect the tree from being cut.
9. Pruning: Prune and/or thin trees and tree forms as directed by Owner or designated representative a minimum of two (2) times a year (once before spring and once during mid-summer) to adequately maintain an attractive shape and fullness with respect to the intended character of the planting.
10. Tree Wrapping: Tree wrapping is to be maintained for a period of one (1) year on newly planted material. At the end of this one (1) year period, tree wrap material is to be removed. If insects and borers are found, all trees on the site, which are subject to infestation are to be sprayed with an appropriate pesticide.
11. Tree Saucers: Tree Saucers are to be maintained per details noted in Construction Documents.
12. Water Removal from Tree Wells: The Landscape Maintenance Contractor is responsible for checking trees for standing water by inspecting the PVC pipe that extends vertically into the tree pit. If standing water is present, pump until all standing water has been removed.

**B. Shrubs and Groundcovers:**

1. Pruning: Prune and/or thin as directed by the Owner or his designated representative a minimum of two (2) times per year to adequately maintain an attractive shape and fullness with respect to the intended character of the plants. Consider specific plant characteristics (e.g., setting of flower buds) to determine specific pruning times.
2. Mulching: All shrub, tree beds and groundcover areas are to be continuously maintained with a clean, freshly mulched appearance using the mulch originally specified. Areas to receive "mulch only" are defined on the Landscape

Development Plan. These areas and all other shrub beds are to be kept free of weeds at all times.

3. Fertilizer: Fertilize all shrubs two times a year with a 21-4-20 I sobutylidendiurea (IBDU) 75% WIN fertilizer or an approved substitute by spreading fertilizer around the base of the plant and working it into the soil by hand. (Use 1/2 cup per foot spread of shrub). See Fertilization Schedule and Details.
4. Insecticides: Inspect shrubs for insects, grubs, mites, etc. a minimum of every two (2) weeks. Apply insecticides and pesticides as per manufacturer's recommendations to effectively control insect infestation.
5. Edging: Edge and trim shrub, groundcover, and tree bed areas such that a clean and manicured appearance is exhibited at all times.
6. Watering: During summer months, if rain does not occur sufficiently to keep all shrubs moist, water thoroughly by soaking each plant. This is particularly important during the first year after planting. During unseasonably dry conditions plants are to be thoroughly watered a minimum of once a week.
7. Policing: Remove all debris such as paper, broken limbs, bottles, cans, etc., during the routine maintenance of the site.

C. Lawn Maintenance:

1. Mowing: All lawn areas shall be mowed to the height specified below. Use rotary type mowers designed for commercial use where possible. Use small mowers for difficult or tight areas where commercial mowers cannot maneuver. Entire extent of lawn area is to be mowed in one operation.
2. Mowing Height and Frequency: Mow all lawn areas to a two and one-half (2-1/2) inch to three (3) inch height. Perform mowing operations as necessary to keep lawn areas within the specified height range. This shall occur a minimum of one (1) time per week during growing season.
3. Edging: Neatly edge and trim around all plant beds, curbs, walks, streets, trees, plants, and building areas. Use edgers or weedeaters with monofilament line for edging. Planting bed shapes and configurations are to be maintained as they were installed. Maintain a clean trenched edge between grass and mulch areas. Care should be taken to avoid injury to tree trunks or plant materials during edging operations. All edging operations are to be performed at each maintenance visit.
4. Clippings: All clippings are to be collected and removed from the site. Clippings can be collected during the mowing process or raked after mowing.
5. Foreign Matter: Remove all extraneous leaves, weeds, trash, limbs and debris from lawn and plant beds as necessary to constantly maintain a completely clean appearance. This shall occur at each maintenance visit.
6. Aerate entire lawn area with mechanical aerator in spring and in early fall.
7. Fertilize entire lawn area using a granulated grade of fertilizer, such as 21-1-10IBDU at the rate and frequency as specified in the Fertilizer Summary.
8. Obtain soil samples from all areas of the site for analysis. Follow fertilizing and liming recommendations from testing laboratory.
9. Weed Control: Use chemical and mechanical means to prevent weeds and/or undesirable grasses from encroaching upon lawns and mulched areas. Maintain a valid Alabama pesticide applicator and operator's license and use chemicals in strict accordance with federal, state, county, and city directives on environmental control. Chemicals must have an EPA approval number.
10. Re-Seeding: Re-seed lawn areas as necessary to maintain a thick, green healthy and attractive appearance at all times. Sparsely grassed areas or areas of damaged lawn areas must immediately be re-scarified and re-seeded (conditions permitting) to re-establish a vigorous and lush appearance.

11. **Watering:** The Contractor is advised that the automatic irrigation system is to be used as a supplement to rainfall. The Contractor is responsible for carefully observing the water requirements for all landscaped areas and either using the irrigation system or other means of watering to maintain healthy, vigorous plant material. It is also the responsibility of the contractor to maintain the irrigation system, including replacement of damaged heads, lines, etc., on a material cost basis, as well as winterization of the system.
- D. **Miscellaneous:** Building foreground areas, parking lots, sidewalks, all roadways and grounds visible from roadways shall be maintained as follows:
1. The entire site: During each maintenance visit remove unsightly litter, broken limbs, debris, etc.
  2. All debris and litter collected during the normal operation shall be removed from the site by the Grounds Maintenance Contractor.
  3. All storm drains, ditches, culverts, etc., within the limits of work must be kept free of litter which could obstruct proper water flow.
- E. **Safety and Chemical Use:**
1. All materials and performance of work must meet all Federal Health and safety laws currently in effect. All chemicals to be used in performance of this Contract must carry an EPA approval number.
  2. Contractor must provide and require the wearing of protective clothing, mask, eye protection, etc., during any operation as required or directed by applicable laws, regulations or ordinances, and/or directions of manufacturers of material or equipment.
  3. All equipment must be properly maintained and is subject to inspection by the Owner. Remove from premises any equipment deemed inoperable or unsafe. All equipment must meet American Standard Safety Specification and OSHA requirements.
  4. The Contractor shall adequately protect workers, adjacent property, and the public, and take all necessary precautions for the safety of his employees on the job and of the persons employed at the facility being maintained.

### 3.2 INSPECTIONS

- A. The Owner, along with the designated representative, will make periodic reviews of the entire site related to visual aspects and the Contractor's performance. The Contractor will, on the sole judgment of the designated representative, make repairs and adjustments as directed by the representative during the site visit.

### 3.3 CLEANUP AND PROTECTION

- A. During Ground Maintenance work, keep pavements clean and work area in an orderly condition.
- B. Protect all plant material and other items (paving, walkways, buildings, etc.) from damage due to maintenance operations. Treat, repair, or replace items damaged by Grounds Maintenance Contractor as directed.

END OF MAINTENANCE

## SECTION - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

### 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. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

#### 1.3 DEFINITIONS

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.

- B. NBR: Acrylonitrile-butadiene rubber.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Qualification Data: For testing agency.

- C. Field quality-control test reports.

#### 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

- 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. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

## PART 2 - PRODUCTS

### 2.1 CONDUCTORS AND CABLES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Alcan Products Corporation; Alcan Cable Division.
2. American Insulated Wire Corp.; a Leviton Company.
3. General Cable Corporation.
4. Senator Wire & Cable Company.
5. Southwire Company.

C. Copper Conductors: Comply with NEMA WC 70.

D. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN.

### 2.2 CONNECTORS AND SPLICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

C. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

## PART 3 - EXECUTION

### 3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

### 3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN-THWN, single conductors in raceway.
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- C. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- D. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- E. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

### 3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."
- F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

### 3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
  - 1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Perform tests and inspections and prepare test reports.
- C. Tests and Inspections:
  - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  - 2. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.
    - a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
    - b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
    - c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- D. Test Reports: Prepare a written report to record the following:
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.
  - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- E. Remove and replace malfunctioning units and retest as specified above.

END OF LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

## SECTION - GROUNDING AND BONDING 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. This Section includes methods and materials for grounding systems and equipment.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in Part 3 "Field Quality Control" Article, including the following:
  - 1. Test wells.
  - 2. Ground rods.
  - 3. Ground rings.
  - 4. Grounding arrangements and connections for separately derived systems.
  - 5. Grounding for sensitive electronic equipment.
- C. Qualification Data: For testing agency and testing agency's field supervisor.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For grounding to include the following in emergency, operation, and maintenance manuals:
  - 1. Instructions for periodic testing and inspection of grounding features at grounding connections for separately derived systems based on NFPA 70B.
    - a. Tests shall be to determine if ground resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if they do not.
    - b. Include recommended testing intervals.

#### 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing

- B. Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
  - 1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association to supervise on-site testing specified in Part 3.
- C. 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.
- D. Comply with UL 467 for grounding and bonding materials and equipment.

## PART 2 - PRODUCTS

### 2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
  - 1. Stranded Conductors: ASTM B 8.
  - 2. Bonding Conductor: No. 3, stranded conductor.

### 2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
  - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

### 2.3 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad **3/4 inch by 10 feet** in diameter.

## PART 3 - EXECUTION

### 3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum.
  - 1. Bury at least 24 inches below grade.
  - 2. Duct-Bank Grounding Conductor: Bury 12 inches above duct bank when indicated as part of duct-bank installation.
- C. Conductor Terminations and Connections:
  - 1. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
  - 2. Connections to Ground Rods at Test Wells: Bolted connectors.

### 3.2 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

- A. Comply with IEEE C2 grounding requirements.
- B. Grounding Manholes and Handholes: Install a driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inches will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches above to 6 inches below concrete. Seal floor opening with waterproof, nonshrink grout.
- C. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields as recommended by manufacturer of splicing and termination kits.
- D. Pad-Mounted Transformers and Switches: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Install tinned-copper conductor not less than No. 2 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 6 inches from the foundation.

### 3.3 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
  - 1. Feeders and branch circuits.
  - 2. Lighting circuits.
  - 3. circuits.
  - 4. Three-phase motor and appliance branch circuits.

### 3.4 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Common Ground Bonding with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
- C. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.
  - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
  - 2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
- D. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches deep, with cover.
  - 1. Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.
- E. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
  - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.

2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a 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 the following field tests and inspections and prepare test reports:
- C. Perform the following tests and inspections and prepare test reports:
  1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
  2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.
    - a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    - b. Perform tests by fall-of-potential method according to IEEE 81.
  3. Prepare dimensioned drawings locating each test well, ground rod and ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
- D. Report measured ground resistances that exceed the following values:
  1. Power and Lighting Equipment or System with Capacity 500 kVA and Less: 10 ohms.
- E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

## SECTION - HANGERS AND SUPPORTS 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. This Section includes the following:
  - 1. Hangers and supports for electrical equipment and systems.
  - 2. Construction requirements for concrete bases.
- B. Related Sections include the following:
  - 1. Division 26 Section "Vibration And Seismic Controls For Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

#### 1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

## 1.5 SUBMITTALS

- A. Product Data: For the following:
  - 1. Steel slotted support systems.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
  - 1. Equipment supports.
- C. Welding certificates.

## 1.6 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

## 1.7 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

## PART 2 - PRODUCTS

### 2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Allied Tube & Conduit.
    - b. Cooper B-Line, Inc.; a division of Cooper Industries.
    - c. ERICO International Corporation.
    - d. GS Metals Corp.
    - e. Thomas & Betts Corporation.
    - f. Unistrut; Tyco International, Ltd.
    - g. Wesanco, Inc.
  - 2. Channel Dimensions: Selected for applicable load criteria.

3. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
  4. Fitting and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.
  5. Rated Strength: Selected to suit applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel or aluminum hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
    - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Hilti Inc.
      - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      - 3) MKT Fastening, LLC.
      - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
  2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
    - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
      - 2) Empire Tool and Manufacturing Co., Inc.
      - 3) Hilti Inc.

- 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
  - 5) MKT Fastening, LLC.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
  4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
  5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
  6. Toggle Bolts: All-steel springhead type.
  7. Hanger Rods: Threaded steel.

## 2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

## PART 3 - EXECUTION

### 3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
  1. Secure raceways and cables to these supports with two-bolt conduit clamps
- B. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

### 3.2 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

### 3.3 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use **3000-psi** 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section Cast-in-Place Concrete
- C. Anchor equipment to concrete base.
  - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
  - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

### END OF HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

## SECTION - UNDERGROUND DUCTS AND RACEWAYS 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. This Section includes the following:
  - 1. Conduit, ducts, and duct accessories for direct-buried.
  - 2. Handholes and boxes.
  - 3. Manholes.

#### 1.3 DEFINITION

- A. RNC: Rigid nonmetallic conduit.

#### 1.4 SUBMITTALS

- A. Product Data: For the following:
  - 1. Duct-bank materials, including separators and miscellaneous components.
  - 2. Ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
  - 3. Accessories for manholes, handholes, boxes.
  - 4. Warning tape.
- B. Shop Drawings for Factory-Fabricated Handholes and Boxes Other Than Precast Concrete: Include dimensioned plans, sections, and elevations, and fabrication and installation details, including the following:
  - 1. Duct entry provisions, including locations and duct sizes.
  - 2. Cover design.
  - 3. Grounding details.
  - 4. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
- C. Duct-Bank Coordination Drawings: Show duct profiles and coordination with other utilities and underground structures.
  - 1. Include plans and sections, drawn to scale, and show bends and locations of expansion fittings.
  - 2. Drawings shall be signed and sealed by a qualified professional engineer.

- D. Product Certificates: For concrete and steel used in precast concrete handholes as required by ASTM C 858.
- E. Qualification Data: For professional engineer and testing agency.
- F. Source quality-control test reports.
- G. Field quality-control test reports.

#### 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Comply with ANSI C2.
- C. Comply with NFPA 70.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.
- B. Store other factory-fabricated underground utility structures at Project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.
- C. Lift and support precast concrete units only at designated lifting or supporting points.

#### 1.7 PROJECT CONDITIONS

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
  - 1. Notify Construction Manager no fewer than two days in advance of proposed interruption of electrical service.
  - 2. Do not proceed with interruption of electrical service without Construction Manager's written permission.

#### 1.8 COORDINATION

- A. Coordinate layout and installation of ducts, manholes, handholes, and boxes with final arrangement of other utilities, site grading, and surface features as determined in the field.
- B. Coordinate elevations of ducts and duct-bank entrances into manholes, handholes, and boxes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations

- C. from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and handholes, and as approved by Architect.

## PART 2 - PRODUCTS

### 2.1 CONDUIT

- A. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.
- B. RNC: NEMA TC 2, Type EPC-40-PVC and Type EPC-80-PVC, UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

### 2.2 HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

- A. Description: Comply with SCTE 77.
  - 1. Color: Green.
  - 2. Configuration: Units shall be designed for flush burial and have open bottom, unless otherwise indicated.
  - 3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
  - 4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
  - 5. Cover Legend: Molded lettering, "ELECTRIC."
  - 6. Direct-Buried Wiring Entrance Provisions: Knockouts equipped with insulated bushings or end-bell fittings, selected to suit box material, sized for wiring indicated, and arranged for secure, fixed installation in enclosure wall.
  - 7. Duct Entrance Provisions: Duct-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
  - 8. Handholes 12 inches wide by 12 inches long and larger shall have factory-installed inserts for cable racks and pulling-in irons.
- B. Polymer Concrete Handholes and Boxes with Polymer Concrete Cover: Molded of sand and aggregate, bound together with a polymer resin, and reinforced with steel or fiberglass or a combination of the two.
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Armorcast Products Company.
    - b. Carson Industries LLC.
    - c. CDR Systems Corporation.
    - d. NewBasis.

### 2.3 CAST-IN-PLACE MANHOLES

- A. Description: Underground utility structures, constructed in place, complete with accessories, hardware, and features. Include concrete knockout panels for conduit entrance and sleeve for ground rod.
- B. Materials: Comply with ASTM C 858 and with Division 03 Section "Cast-in-Place Concrete."
- C. Structural Design Loading: As specified in Part 3 "Underground Enclosure Application" Article.

### 2.4 SOURCE QUALITY CONTROL

- A. Test and inspect precast concrete utility structures according to ASTM C 1037.
- B. Nonconcrete Handhole and Pull-Box Prototype Test: Test prototypes of manholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
  - 1. Tests of materials shall be performed by a independent testing agency.
  - 2. Strength tests of complete boxes and covers shall be by either an independent testing agency or the manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
  - 3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

## PART 3 - EXECUTION

### 3.1 UNDERGROUND DUCT APPLICATION

- A. Ducts for Electrical Feeders 600 V and Less: RNC, NEMA Type EPC-40-PVC, in direct-buried duct bank, unless otherwise indicated.
- B. Ducts for Electrical Branch Circuits: RNC, NEMA Type EPC-40-PVC, in direct-buried duct bank, unless otherwise indicated.
- C. Underground Ducts Crossing Roadways RNC, NEMA Type EPC-40-PVC, encased in reinforced concrete.

### 3.2 EARTHWORK

- A. Excavation and Backfill: Comply with Division 31 Section "Earth Moving," but do not use heavy-duty, hydraulic-operated, compaction equipment.
- B. Restore surface features at areas disturbed by excavation and reestablish original grades, unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

- C. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 32 Sections "Turf and Grasses" and "Plants."
- D. Cut and patch existing pavement in the path of underground ducts and utility structures according to Division 01 Section "Cutting and Patching."

### 3.3 DUCT INSTALLATION

- A. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes to drain in both directions.
- B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches both horizontally and vertically, at other locations, unless otherwise indicated.
- C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.
- D. Duct Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches o.c. for 5-inch ducts, and vary proportionately for other duct sizes.
  - 1. Begin change from regular spacing to end-bell spacing 10 feet from the end bell without reducing duct line slope and without forming a trap in the line.
  - 2. Direct-Buried Duct Banks: Install an expansion and deflection fitting in each conduit in the area of disturbed earth adjacent to manhole or handhole.
  - 3. Grout end bells into structure walls from both sides to provide watertight entrances.
- E. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.
- F. Pulling Cord: Install 100-lbf- test nylon cord in ducts, including spares.
  - 1. Warning Tape: Bury warning tape approximately 12 inches above all concrete-encased ducts and duct banks. Align tape parallel to and within 3 inches of the centerline of duct bank. Provide an additional warning tape for each 12-inch increment of duct-bank width over a nominal 18 inches. Space additional tapes 12 inches apart, horizontally.
- G. Direct-Buried Duct Banks:
  - 1. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.
  - 2. Space separators close enough to prevent sagging and deforming of ducts, with not less than 4 spacers per 20 feet of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and

3. contraction as temperature changes. Stagger spacers approximately 6 inches between tiers.
4. Excavate trench bottom to provide firm and uniform support for duct bank. Prepare trench bottoms as specified in Division 31 Section "Earth Moving" for pipes less than 6 inches in nominal diameter.
5. Install backfill as specified in Division 31 Section "Earth Moving."
6. After installing first tier of ducts, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand-place backfill to 4 inches over ducts and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."
7. Install ducts with a minimum of 3 inches between ducts for like services and 6 inches between power and signal ducts.
8. Depth: Install top of duct bank at least 36 inches below finished grade, unless otherwise indicated.
9. Set elevation of bottom of duct bank below the frost line.
10. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
11. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
  - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
  - b. For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.
12. Warning Tape: Bury warning tape approximately 12 inches above all ducts and duct banks. Align tape parallel to and within 3 inches of the centerline of duct bank. Provide an additional warning tape for each 12-inch increment of duct-bank width over a nominal 18 inches. Space additional tapes 12 inches apart, horizontally.

#### 3.4 INSTALLATION OF HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of ducts, and seal joint between box and extension as recommended by the manufacturer.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: In paved areas and trafficways, set so cover surface will be flush with finished grade. Set covers of other handholes 1 inch above finished grade.

- D. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in the enclosure.
- E. Field-cut openings for ducts and conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

### 3.5 GROUNDING

- A. Ground underground ducts and utility structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

### 3.6 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections and prepare test reports:
  - 1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
  - 2. Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.

### 3.7 CLEANING

- A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.
- B. Clean internal surfaces of manholes, including sump. Remove foreign material.

**END OF UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS**

## SECTION - 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
- 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 an orange field
  - 2. Legend: Indicate voltage and system or service type.
- C. 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.
- D. 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.
- E. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- F. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

### 2.2 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, with stamped legend, punched for use with self-locking cable tie fastener.
- D. **Write-On Tags:** Polyester tag, 0.010 inch 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 long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

### 2.3 CONDUCTOR IDENTIFICATION MATERIALS

- A. **Color-Coding Conductor Tape:** Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches 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 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, 0.010 inch 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.

#### 2.4 FLOOR MARKING TAPE

- A. 2-inch- wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

#### 2.5 UNDERGROUND-LINE WARNING TAPE

- A. Tape:
  1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical 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,
  3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE,

#### 2.6 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 grommets in corners for mounting.
  3. Nominal size, 7 by 10 inches.
- D. Metal-Backed, Butyrate Warning Signs:
  1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application.
  2. 1/4-inch grommets in corners for mounting.
  3. Nominal size, 10 by 14 inches.
- 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."

## 2.7 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch 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.
- 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. Overlay shall provide a weatherproof and UV-resistant seal for label.

## 2.8 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.
- 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. 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.
- 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.

## 2.9 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.
  2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  3. Temperature Range: Minus 40 to plus 185 deg F.
  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.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  - 3. Temperature Range: Minus 40 to plus 185 deg F.
  - 4. Color: Black.
  
- C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.
  - 3. UL 94 Flame Rating: 94V-0.
  - 4. Temperature Range: Minus 50 to plus 284 deg F.
  - 5. Color: Black.

## 2.10 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in Division 09 painting Sections 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 maximum intervals in straight runs, and at 25-foot 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.
  - 2. In Spaces Handling Environmental Air: Plenum rated.
- I. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade.
- J. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

### 3.2 IDENTIFICATION SCHEDULE

- A. 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 service 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 208/120-V Circuits:
      - 1) Phase A: Black.
      - 2) Phase B: Red.
      - 3) Phase C: Blue.
    - c. Colors for 480/277-V Circuits:
      - 1) Phase A: Brown.
      - 2) Phase B: Orange.
      - 3) Phase C: Yellow.
    - d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches 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.
- B. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- C. 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.

- D. **Workspace Indication:** Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- E. **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.
- F. **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. .
    - b. **Outdoor Equipment:** Engraved, laminated acrylic or melamine label.
    - c. **Elevated Components:** Increase sizes of labels and letters to those appropriate for viewing from the floor.
    - d. 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 laminated acrylic or melamine label.
    - b. Enclosures and electrical cabinets.
    - c. Enclosed switches.
    - d. Enclosed circuit breakers.

END OF IDENTIFICATION OF ELECTRICAL SYSTEMS

## SECTION - FUSES

### 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. Cartridge fuses rated 600-V ac and less for use in enclosed switches.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material, dimensions, descriptions of individual components, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:
  - 1. Ambient Temperature Adjustment Information: If ratings of fuses have been adjusted to accommodate ambient temperatures, provide list of fuses with adjusted ratings.
    - a. For each fuse having adjusted ratings, include location of fuse, original fuse rating, local ambient temperature, and adjusted fuse rating.
    - b. Provide manufacturer's technical data on which ambient temperature adjustment calculations are based.
  - 2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
  - 3. Current-limitation curves for fuses with current-limiting characteristics.
  - 4. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
  - 5. Coordination charts and tables and related data.
  - 6. Fuse sizes for elevator feeders and elevator disconnect switches.
- B. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
  - 1. Ambient temperature adjustment information.
  - 2. Current-limitation curves for fuses with current-limiting characteristics.
  - 3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
  - 4. Coordination charts and tables and related data.

#### 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NEMA FU 1 for cartridge fuses.
- D. Comply with NFPA 70.
- E. Comply with UL 248-11 for plug fuses.

#### 1.5 PROJECT CONDITIONS

- A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F or more than 100 deg F apply manufacturer's ambient temperature adjustment factors to fuse ratings.

#### 1.6 COORDINATION

- A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following
  - 1. Cooper Bussmann, Inc.
  - 2. Edison Fuse, Inc.
  - 3. Ferraz Shawmut, Inc.
  - 4. Littelfuse, Inc.

#### 2.2 CARTRIDGE FUSES

- A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

#### 2.3 PLUG FUSES

- A. Characteristics: UL 248-11, nonrenewable plug fuses; 125-V ac.

## 2.4 PLUG-FUSE ADAPTERS

- A. Characteristics: Adapters for using Type S, rejection-base plug fuses in Edison-base fuseholders or sockets; ampere ratings matching fuse ratings; irremovable once installed.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.
- B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.
- C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.
- D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 FUSE APPLICATIONS

- A. Cartridge Fuses:
  - 1. Service Entrance: Class L, fast acting

### 3.3 INSTALLATION

- A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.
- B. Install plug-fuse adapters in Edison-base fuseholders and sockets. Ensure that adapters are irremovable once installed.
- C. Install spare-fuse cabinet(s).

### 3.4 IDENTIFICATION

- A. Install labels complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block, socket, and holder.

END OF FUSES

## SECTION - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Fusible switches.
  - 2. Enclosures.

#### 1.3 DEFINITIONS

- A. NC: Normally closed.
- B. NO: Normally open.
- C. SPDT: Single pole, double throw.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7
  - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

#### 1.5 SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
  - 1. Enclosure types and details for types other than NEMA 250, Type 1.
  - 2. Current and voltage ratings.
  - 3. Short-circuit current ratings (interrupting and withstand, as appropriate).
  - 4. Include evidence of NRTL listing for series rating of installed devices.
  - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.

- 6. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.
  - B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.
    - 1. Wiring Diagrams: For power, signal, and control wiring.
  - C. Qualification Data: For qualified testing agency.
  - D. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.
    - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
    - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
  - E. Field quality-control reports.
    - 1. Test procedures used.
    - 2. Test results that comply with requirements.
    - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
  - F. Manufacturer's field service report.
  - G. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
    - 1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
    - 2. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.
- 1.6 QUALITY ASSURANCE
- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
    - 1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.
  - B. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.

- C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Comply with NFPA 70.

#### 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
  - 1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
  - 2. Altitude: Not exceeding 6600 feet.

#### 1.8 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

### PART 2 - PRODUCTS

#### 2.1 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
  - 3. Siemens Energy & Automation, Inc.
  - 4. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 240 -V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate [specified] [indicated] fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
  - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
  - 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.

3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Service-Rated Switches: Labeled for use as service equipment.

## 2.2 ENCLOSURES

- A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
  1. Outdoor Locations: NEMA 250, Type 4X

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- D. Install fuses in fusible devices.
- E. Comply with NECA 1.

### 3.3 IDENTIFICATION

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."
  1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
  2. Label each enclosure with engraved metal or laminated-plastic nameplate.

### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

- B. **Manufacturer's Field Service:** Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- C. **Perform tests and inspections.**
  - 1. **Manufacturer's Field Service:** Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. **Acceptance Testing Preparation:**
  - 1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
  - 2. Test continuity of each circuit.
- E. **Tests and Inspections:**
  - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  - 3. Perform the following infrared scan tests and inspections and prepare reports:
    - a. **Initial Infrared Scanning:** After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each enclosed switch and circuit breaker. Remove front panels so joints and connections are accessible to portable scanner.
    - b. **Follow-up Infrared Scanning:** Perform an additional follow-up infrared scan of each enclosed switch and circuit breaker 11 months after date of Substantial Completion.
    - c. **Instruments and Equipment:** Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
  - 4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
- F. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
- G. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

### 3.5 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

### END OF ENCLOSED SWITCHES AND CIRCUIT BREAKERS

## SECTION - EXTERIOR LIGHTING

### 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. Exterior luminaires with lamps and ballasts.
  - 2. Luminaire-mounted photoelectric relays.
  - 3. Poles and accessories.

#### 1.3 DEFINITIONS

- A. CRI: Color-rendering index.
- B. HID: High-intensity discharge.
- C. Luminaire: Complete lighting fixture, including ballast housing if provided.
- D. Pole: Luminaire support structure, including tower used for large area illumination.
- E. Standard: Same definition as "Pole" above.

#### 1.4 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4.
- B. Live Load: Single load of 500 lbf, distributed as stated in AASHTO LTS-4.
- C. Ice Load: Load of 3 lbf/sq. ft., applied as stated in AASHTO LTS-4.
- D. Wind Load: Pressure of wind on pole and luminaire, calculated and applied as stated in AASHTO LTS-4.

#### 1.5 SUBMITTALS

- A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:

1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
  2. Details of attaching luminaires and accessories.
  3. Details of installation and construction.
  4. Luminaire materials.
  5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.
    - a. For indicated luminaires, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
    - b. Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
  6. Photoelectric relays.
  7. Ballasts, including energy-efficiency data.
  8. Lamps, including life, output, and energy-efficiency data.
  9. Materials, dimensions, and finishes of poles.
  10. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
  11. Anchor bolts for poles.
  12. Manufactured pole foundations.
- B. Shop Drawings:
1. Anchor-bolt templates keyed to specific poles and certified by manufacturer.
  2. Design calculations, certified by a qualified professional engineer, indicating strength of screw foundations and soil conditions on which they are based.
- C. Samples for Verification: For products designated for sample submission in Exterior Lighting Device Schedule. Each sample shall include lamps and ballasts.
- D. Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in AASHTO LTS-4 and that load imposed by luminaire has been included in design.
- E. Qualification Data: For agencies providing photometric data for lighting fixtures.
- F. Field quality-control test reports.
- G. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.
- H. Warranty: Special warranty specified in this Section.

## 1.6 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7.
- C. 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.
- D. Comply with IEEE C2, "National Electrical Safety Code."
- E. Comply with NFPA 70.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Package aluminum poles for shipping according to ASTM B 660.
- B. Store poles on decay-resistant-treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.
- C. Handle wood poles so they will not be damaged. Do not use pointed tools that can indent pole surface more than 1/4 inch deep. Do not apply tools to section of pole to be installed below ground line.
- D. Retain factory-applied pole wrappings on fiberglass and laminated wood poles until right before pole installation. Handle poles with web fabric straps.
- E. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

## 1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
  - 1. Warranty Period for Luminaires: Five years from date of Substantial Completion.
  - 2. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
  - 3. Warranty Period for Color Retention: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
- B. In Exterior Lighting Device Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:
  - 1. Basis of Design Product: The design of each item of exterior luminaire and its support is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

### 2.2 LUMINAIRES, GENERAL REQUIREMENTS

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
- B. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
- G. Exposed Hardware Material: Stainless steel.
- H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
- J. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
  - 1. White Surfaces: 85 percent.
  - 2. Specular Surfaces: 83 percent.
  - 3. Diffusing Specular Surfaces: 75 percent.

- K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- L. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- M. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - 1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
  - 2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
    - a. Color: As selected by Architect from manufacturer's full range.
- N. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
  - 2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
  - 3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
  - 4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
    - a. Color: As selected by the Architect.

### 2.3 LUMINAIRE-MOUNTED PHOTOELECTRIC RELAYS

- A. Comply with UL 773 or UL 773A.
- B. Contact Relays: Factory mounted, single throw, designed to fail in the on position, and factory set to turn light unit on at 1.5 to 3 fc and off at 4.5 to 10 fc with 15-second minimum time delay. Relay shall have directional lens in front of photocell to prevent artificial light sources from causing false turnoff.
  - 1. Relay with locking-type receptacle shall comply with NEMA C136.10.
  - 2. Adjustable window slide for adjusting on-off set points.

## 2.4 POLES AND SUPPORT COMPONENTS, GENERAL REQUIREMENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4.
  - 1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in Part I "Structural Analysis Criteria for Pole Selection" Article, with a gust factor of 1.3.
  - 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts, unless otherwise indicated.
- C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
  - 1. Materials: Shall not cause galvanic action at contact points.
  - 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication, unless stainless-steel items are indicated.
  - 3. Anchor-Bolt Template: Plywood or steel.
- D. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete."
- E. Power-Installed Screw Foundations: Factory fabricated by pole manufacturer, with structural steel complying with ASTM A 36/A 36M and hot-dip galvanized according to ASTM A 123/A 123M; and with top-plate and mounting bolts to match pole base flange and strength required to support pole, luminaire, and accessories.
- F. Breakaway Supports: Frangible breakaway supports, tested by an independent testing agency acceptable to authorities having jurisdiction, according to AASHTO LTS-4.

## 2.5 STEEL POLES

- A. Poles: Comply with ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psig; 1-piece construction up to 40 feet in height with access handhole in pole wall.
  - 1. Shape: As selected by the Architect
  - 2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.
- B. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- C. Steps: Fixed steel, with nonslip treads, positioned for 15-inch vertical spacing, alternating on opposite sides of pole; first step at elevation 10 feet above finished grade.

- D. Intermediate Handhole and Cable Support: Weathertight, 3-by-5-inch handhole located at midpoint of pole with cover for access to internal welded attachment lug for electric cable support grip.
- E. Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- F. Cable Support Grip: Wire-mesh type with rotating attachment eye, sized for diameter of cable and rated for a minimum load equal to weight of supported cable times a 5.0 safety factor.
- G. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- H. Galvanized Finish: After fabrication, hot-dip galvanize complying with ASTM A 123/A 123M.
- I. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - 1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
  - 2. Interior Surfaces of Pole: One coat of bituminous paint, or otherwise treat for equal corrosion protection.
  - 3. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
    - a. Color: As selected by Architect from manufacturer's full range.

## 2.6 ALUMINUM POLES

- A. Poles: Seamless, extruded structural tube complying with ASTM B 429, Alloy 6063-T6 with access handhole in pole wall.
- B. Poles: ASTM B 209, 5052-H34 marine sheet alloy with access handhole in pole wall.
  - 1. Shape: As selected by Architect.
  - 2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.
- C. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- D. Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems," listed for attaching

- E. grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- F. Brackets for Luminaires: Detachable, with pole and adapter fittings of cast aluminum. Adapter fitting welded to pole and bracket, then bolted together with stainless-steel bolts.
  - 1. Tapered oval cross section, with straight tubular end section to accommodate luminaire.
  - 2. Finish: Same as luminaire.
- G. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- H. Aluminum Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
  - 2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
  - 3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
  - 4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
    - a. Color: As Selected by Architect.

## 2.7 DECORATIVE POLES

- A. Pole Material:
  - 1. Cast ductile iron.
  - 2. Cast gray iron, according to ASTM A 48/A 48M, Class 30.
  - 3. Cast aluminum.
  - 4. Cast concrete.
  - 5. Spun concrete.
  - 6. Steel tube, covered with closed-cell polyurethane foam, with a polyethylene exterior.
  - 7.
- B. Mounting Provisions:
  - 1. Bolted to concrete foundation.
  - 2. Embedded.
- C. Fixture Brackets:
  - 1. Cast ductile iron.
  - 2. Cast gray iron.

- 3. Cast aluminum.
- D. Pole Finish: As selected by Architect.

## PART 3 - EXECUTION

### 3.1 LUMINAIRE INSTALLATION

- A. Install lamps in each luminaire.
- B. Fasten luminaire to indicated structural supports.
  - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- C. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources.

### 3.2 POLE INSTALLATION

- A. Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
- B. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- C. Foundation-Mounted Poles: Mount pole with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer.
  - 1. Use anchor bolts and nuts selected to resist seismic forces defined for the application and approved by manufacturer.
  - 2. Grout void between pole base and foundation. Use nonshrink or expanding concrete grout firmly packed to fill space.
  - 3. Install base covers, unless otherwise indicated.
  - 4. Use a short piece of 1/2-inch- diameter pipe to make a drain hole through grout. Arrange to drain condensation from interior of pole.
- D. Raise and set poles using web fabric slings (not chain or cable).

### 3.3 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: Comply with Division 26 Section "Raceway and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch- thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

### 3.4 GROUNDING

- A. Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
  - 1. Install grounding electrode for each pole, unless otherwise indicated.
  - 2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.
  
- B. Ground nonmetallic poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
  - 1. Install grounding electrode for each pole.
  - 2. Install grounding conductor and conductor protector.
  - 3. Ground metallic components of pole accessories and foundations.

### 3.5 FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
  
- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
  - 1. Verify operation of photoelectric controls.
  
- C. Illumination Tests:
  - 1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
    - a. IESNA LM-5, "Photometric Measurements of Area and Sports Lighting."
    - b. IESNA LM-50, "Photometric Measurements of Roadway Lighting Installations."
    - c. IESNA LM-52, "Photometric Measurements of Roadway Sign Installations."
    - d. IESNA LM-64, "Photometric Measurements of Parking Areas."
    - e. IESNA LM-72, "Directional Positioning of Photometric Data."
  
- D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

### 3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain luminaire lowering devices. Refer to Division 01 Section "Demonstration and Training."

END OF EXTERIOR LIGHTING



# HUNTSVILLE

Urban Development Department

Kathy Martin, P.E.  
Director  
City Engineer

**REDSTONE GATEWAY PACKAGE I-LAKE F (Bid Package  
I-1 Mass Grading, Fine Grading, Erosion Control, Storm,  
and Pond Liner  
Project No. 65-12-SP23  
February 4, 2013**

**Addendum #1**

All addenda and attachments for the above-referenced project will become part of the contract documents.

**THE BID OPENING HAS BEEN POSTPONED FROM TUESDAY, FEBRUARY 5, 2013 AT 10:00 A.M. TO THURSDAY, FEBRUARY 7, 2013 AT 10:00 A.M. TO BE HELD IN THE 1<sup>ST</sup> FLOOR CONFERENCE ROOM, 320 FOUNTAIN CIRCLE, HUNTSVILLE, AL**

**END OF ADDENDUM #1**

The Star of Alabama



# HUNTSVILLE

Kathy Martin, P.E.  
Director  
City Engineer

Urban Development Department  
Engineering Division

**REDSTONE GATEWAY PACKAGE I-LAKE F (Bid Package  
I-1 Mass Grading, Fine Grading, Erosion Control, Storm,  
and Pond Liner**  
**Project No. 65-12-SP23**  
**February 4, 2013**

**Addendum #2**

All addenda and attachments for the above-referenced project will become part of the contract documents.

Listed below are the minutes from the Mandatory Pre-Bid Meeting:

## MANDATORY PRE-BID MEETING

DATE: Tuesday, January 29, 2013

REDSTONE GATEWAY: **Package I – Lake F**  
**(Package I-1 Mass Grading/Pond Liner)**

PROJECT # 65-12-SP23

OWNER: City Of Huntsville

PROJECT MANGER: Brasfield & Gorrie L.L.C.

PROJECT ENGINEER: LBYD Civil and Structural Engineers

INSPECTIONS: Garver, LLC

SURVEYOR: Garver, LLC

GEOTECHNICAL ENGINEER: Building and Earth Sciences

The Star of Alabama

1. Introduction of all persons present, their roles, chain of command, importance of submittals, etc. (PM)

**HANDOUTS:**

- a. Phasing Plan
- b. Redstone Security Procedures
- c. Project Directory

**\*\*\* If you have questions regarding the bid process, please write them down and hold them until the end of this pre-bid meeting (#16 on agenda). If you have specific questions related to the project scope, drawings or specs, they need to be submitted in writing to B&G and will be answered and distributed to all bidders as an addendum.\*\*\***

2. Project Engineer to give a description of work specific to this bid package. Also include description of phase 1 packages (including work "by others" that will have to be coordinated with – List of work "by others" in instructions to bidders) ADEM issues and brief description of future phase 2 and 3. (PE)
  - 34.5 acres
  - Mass Grading +/- 200,000/CY
  - 7 acre Lake, 16' deep, with 3.3 acre bottom
  - Culvert Line F
  - Rail Spur grading and drainage work
3. Project Manager to discuss Schedule of Operations, erosion control plan, disposal of debris from clearing and grubbing, undercutting and replacement, importance of soil management, milestone dates and LD's, importance for control of concrete and asphalt temperature during hot/cold weather, safety, sinkhole remediation, other trade scope that could impact your work, etc. (PM)
  - Attachment A shows 120 calendar day completion with liquidated damages however this will be revised to 170 calendar days per the attached revised "Attachment A"
  - See attached Exhibit 1.0 (EX 1.0) for Area RG 6500 that must turned over in 40 calendar days
  - The contractor must include in their bid erosion control and traffic control
4. The following is a list of items (but no limited to) that must be submitted per the bid document requirements that must be submitted by the prime contractor post award: (PM)
  - Balanced Schedule of Values (*within 2 business days of award*)
  - Site Construction Traffic Control Plan (*Prior to Construction Start*)
  - Federal tax form to City (*At time of contract award*)
  - Project Schedule that includes coordination with other packages and future work, time to prepare and approve shop drawings, fabricate and deliver materials and install / complete scope (*within 10 calendar days of award*)
  - Payment and Performance bond (*15 Days after acceptance of proposal*)
  - Shop Drawings (*Prior to Installation / Placement*)
  - Weekly Safety meeting minutes and associated sign in sheets

- Any results by third party safety inspector
- Lien waivers with pay requests
- Seismic surveys / Pre-Blast surveys (*Prior to Drilling and Blasting if required*)
- Red-Line as-built drawings (*at completion of associated scope prior to owner acceptance*)

*(In Addition, YOUR first pay estimate will NOT BE PROCESSED UNTIL ALL REQUIRED DOCUMENTS HAVE BEEN RECEIVED AND APPROVED).*

5. Discuss all Permits, testing, surveying (Dig Permit) (PM)
  - The dig permit issued by Redstone Arsenal is no longer required
6. Discuss Bid Form details (Attachment "B" + appropriate Proposal Form) (PM)
  - Submit 3 original bid proposals with attachments A thru I
  - The bid form will be revised to include an allowance for adding 3" Bentonite to the pond liner, additional information will be issued in a future Addendum
7. Contractor is required to submit pricing in person per requirements set forth in bid documents. Failure to do so shall be cause for rejection of bid. A "balanced" detailed Schedule of values including quantities and unit prices that total up to bid Lump Sum to be submitted within two (2) Business Days as basis to establish additive and deductive changes in scope for this project. (PM)
  - A "balanced" detailed Schedule of values including quantities and unit prices that total up to bid Lump Sum to be submitted within two (2) Business Days as basis to establish additive and deductive changes in scope for this project
8. Utility Project Notification – LBYD to give a description of utility requirements/conflicts. Attached: names and phone numbers of utility contractors (Pre-Bid attachment "c") for conflict assistance. Contractor is responsible for locating all utilities. (PE)
  - Reference Project Directory for Utility Company contact information if needed
9. Discuss Submittal of Shop Drawings, as-built requirements, working drawings, material submittals, job-mix formulas in accordance with the time limits in the contract. (PE)

The approval of shop drawings by the Project Manager will cover only the features of the design and in no case shall this approval be considered to cover error or omissions in shop details or a check of any dimensions. The Contractor shall be responsible for the accuracy of the shop drawings, the fabrication of materials and the fit of all connections; and he shall bear the cost of all extra work caused by errors in shop drawings or in fabrication, inaccurate workmanship, misfits of connections or for any changes in fabrication necessary. No work shall be done on the material before the shop drawings have been approved. Any material that the Contractor orders prior to the approval shall be at the Contractor's risk.

Substitutions or changes whether indicated or implied on shop drawings will not be considered as changes regardless of the Engineer's approval of shop drawings unless the change has been previously submitted and approved as a change order per the requirements for changes in the contract.

After a shop drawing has been approved, no changes shall be made unless directed in writing to the Owner and acceptance by the Owner of said changes. Any acceptance of change by the Owner does not constitute a change to the contract unless that change has been approved and directed in writing per change order. Compensation for preparing and furnishing all shop and working drawings shall be included in the contract unit prices for the various items of work.

10. Project Engineer & Project Manager to discuss plans and specs:
  - a. A review of the plans should be made with emphasis placed on unusual construction features and special drawings (PE)
    - Demolition of substation foundations below grade is required
    - Demolition of substation, fence, and overhead lines above grade is by the Package I-3 Contractor
    - Landscaping, Irrigation and Hardscape (sidewalks) will bid separately at a later date
  - b. Specifications should be discussed with emphasis on time charges, extra work, materials, etc. (PM)
    - Robert Adams/BES noted that the clay liner must be installed at 98% compaction, 2% above optimum moisture, and at least 80% of the material passing the #200 sieve
  - c. State of Alabama classification of MU and HS for this project, (PM)
    - State of Alabama General Contractor' license is required
11. Project Manager to discuss Bid Process and Special Provisions (Instructions to Bidders). (PM)
  1. Each item (attachments) of the contract should be read out and any questions concerning the method of measurement or payment discussed.
  2. Discuss Milestone and Calendar days to complete project. (ask if there any concern that contract cannot be completed within contract time specified.)
  3. Introduction and explanation of any revisions to Supplement to General Requirements.
  - Contractors were advised to pay close attention to the Instructions to Bidders
12. Sequence of Construction and Traffic Control with the contractor made aware of his/her responsibility to handle traffic safely through the work zone. The method of payment for traffic control shall be discussed and clearly understood. (PM)
  - Bidders must include traffic control in their bid
13. For any trench cuts within existing roadways, Contractor is required to patch area with asphalt mix within the same day, unless otherwise specified by the Engineer. (Dense graded Base is no longer an acceptable means of traffic control within existing roadway cuts.) (PM)

14. Discuss Redstone Arsenal Security Information for any work “inside” the Redstone Arsenal Security Fence. Security Badges to be coordinated through Brasfield and Gorrie and contractors should allow a minimum of 2 weeks for approval.
  - The mass grading scope is outside Redstone Arsenal however if security badges are requested they must be submitted to Brasfield & Gorrie and the Contractor should allow 2 weeks for approval
15. Successful contractor will be required to sign the following statement, included as part of the contract: (PM)

The Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No. 2011-535, Code of Alabama (1975) § 31-13-1 through 31-13-30 (also known as and hereinafter referred to as “ the Alabama Immigration Act”) as amended by Act No. 2012-491 on May 16, 2012 is applicable to all competitively bid contracts with the City of Huntsville. As a condition for the award of a contract and as a term and condition of the contract with the City of Huntsville, in accordance with § 31-13-9 (a) of the Alabama Immigration Act, as amended, any business entity or employer that employs one or more employees shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama.

During the performance of the contract, such business entity or employer shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations. The business entity or employer shall assure that these requirements are included in each subcontract in accordance with §31-13-9(c). Failure to comply with these requirements may result in breach of contract, termination of the contract or subcontract, and possibly suspension or revocation of business licenses and permits in accordance with §31-13-9 (e) (1) & (2).

Code of Alabama (1975) § 31-13-9 (k) requires that the following clause be included in all City of Huntsville contracts that have been competitively bid and is hereby made a part of this contract:

“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.”

Contractor’s E-Verify Memorandum of Understanding shall be a part of the contract bid documents and shall be submitted with the bid package.

16. Any Prime Contractors should be given the opportunity to ask questions or discuss items with which they are concerned. (PM)
  - See Q&A section after item 18 below

17. All questions need to be sent in writing to Matt Kelley (COH Project Manager) at [mkelley@brasfieldgorrie.com](mailto:mkelley@brasfieldgorrie.com). All questions / clarifications will be answered by an addendum. The pre-bid notes and all addenda shall become a part of the contract documents.
18. Last day for questions concerning this project before the bid will be Friday, February 1, 2013 at 10:00 a.m. Send all questions to Matt Kelley at [mkelley@brasfieldgorrie.com](mailto:mkelley@brasfieldgorrie.com) or fax to Matt Kelley at 205-714-1399. Final Addendum will be issued no later than Monday, February 4, 2013 at 10:00 a.m.

CONTRACTOR QUESTIONS:

1. Q. Will a detail be provided for the culvert tie-in at Line F-3 to the existing slope culvert on sheet C5.1?  
A. Yes, this will be issued in a future Addendum.
2. Q. Will a detail be provided for the storm line G-1 tie-in at the precast wing wall at end of F line on sheet C5.1?  
A. Yes, this will be issued in a future Addendum.
3. Q. What does the allowance to add 3% bentonite mean?  
A. Based on the on-site soils, adding 15/lbs. of bentonite per square yard to the top 6 inches of soil should achieve at least 3% bentonite by weight.
4. Q. Will excess material have to be hauled offsite?  
A. Yes.
5. Q. Are there any special requirements or training required to haul the contaminated soils to Redstone Arsenal?  
A. No.
6. Q. Can the Contractor legally transport the petroleum contaminated soils to the Redstone Arsenal contaminated soils recycling facility?  
A. Yes provided the truck remains on the EUL/Redstone Arsenal property.
7. Q. Who has to guarantee the pond will not leak?  
A. The Contractor shall be responsible for all construction means, methods, and techniques in the performance of the work. Any testing, inspection, or other quality control measures deemed necessary by the Contractor to assure his work is in accordance with the contract requirements shall be the responsibility of the Contractor. The Owner may perform (or may have performed) material testing for its own quality assurance purposes; however, this testing does not relieve the Contractor of responsibility for compliance with the Contract Documents nor shall it be construed to be an acceptance of defective or improper work. The Package I-1 Contractor shall guarantee the pond liner was constructed in a manner

and with material that meets the project plans, specifications, and geotechnical requirements.

8. Q. Who will demo the existing temporary outlet control structure shown on sheet C3.2?  
A. The Package I-1 Contractor.
9. Q. Will the 3% bentonite be added to the 1' thick pond liner or just the top 6" layer?  
A. Just the top 6" layer.
10. Q. How will the pond liner be protected from drying out?  
A. The Contractor will be required to install 4" of topsoil over the pond liner side slopes, 2 feet of topsoil within the littoral zones, and sequence this work to keep the pond liner from drying out. See detail on C7.2. The littoral zones are 2' deep. The elevation of littoral zones will be from EL = 630.50 to EL 632.50 (noted by dashed contours on grading plan).
11. Q. Who has the ADEM permit?  
A. The ADEM permit is in L.W. Redstone's name who is the Developer. The Contractor will be responsible for maintaining all erosion control devices as required by ADEM and following all ADEM requirements. The contractor will be responsible for any ADEM fees/fines if incurred due to the Contractor's negligence during the construction of Package I.
12. Q. Are there any special seep collars required?  
A. Yes the Package I-1 Contractor is responsible for installing the anti-seep collars per sheet C7.2.
13. Q. Is there existing topsoil onsite or has it already been stripped?  
A. There is an existing 4" layer of topsoil onsite. However it should be noted that the bottom of the existing detention pond does not have any topsoil. There is an existing 2,500/cy topsoil stockpile on the North end of the lake and existing 1,500/cy topsoil stockpile on the South end of the lake that can be utilized. It should also be noted there is also a large topsoil stockpile located in Redstone Arsenal (secured areas) approximately 1.5 miles west of the project off of Overlook Road that can be utilized. The Contractor will be required to repair the haul route if damaged during hauling operations as well as fine grade and seed the stockpile area that is disturbed upon completion.
14. Q. Who has to backfill the culverts currently being installed the Package I-4 Concrete Box Culvert Contractor?  
A. The Package I-1 Contractor will be required to backfill at the box culverts.
15. Q. Where is Exhibit 1 referenced 1.0 referenced in Attachment A that shows the RG 6500 area?  
A. See attached which was mistakenly left out of the specifications.

16. Q. Has the Bid Date been changed?

A. Yes the Bid Date has been revised to Thursday February 7, 2013 at 10:00 am at the City of Huntsville Public Services Building, First Floor Conference Room, 320 Fountain Circle, Huntsville, AL 35801.

**Attachments:** EX 1.0 RG 6500  
Attachment "A"

**END OF ADDENDUM #2**

**ATTACHMENT "A" to Proposal  
REDSTONE GATEWAY PACKAGE I Lake F  
PROJECT #65-12-SP23**

**Schedule Milestone Dates  
(Calendar Days from Anticipated General Notice to Proceed Date)**

| <b><u>Responsibility</u></b> | <b><u>Construction Activity</u></b>                                                            | <b><u>Days from NTP to Milestone Completion</u></b> |
|------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Package I-1                  | Mass Grading/Pond Liner (NTP)<br>Complete Package I-1<br>Finish RG 6500 Area (per Exhibit 1.0) | TBD<br>170 days**<br>40 days**                      |
| Package I-2                  | Hardscape/Amenities<br>Landscaping and Irrigation (NTP)<br>Complete Package I-2                | TBD<br>90 days**                                    |
| Package I-3                  | Electrical Distribution System Demolition<br>Complete Package I-3                              | 1/8/13<br>70 days**                                 |
| Package I-4                  | Concrete Box Culverts (NTP)<br>Complete Package I-4                                            | 12/17/12<br>80 days**                               |

**Legend**

**\*\* - LIQUIDATED DAMAGES WILL BE APPLIED**

**Notes:**

1. If NTP dates are delayed through no fault of the contractor, NTP dates will be adjusted accordingly.





# HUNTSVILLE

Urban Development Department  
Engineering Division

Kathy Martin, P.E.  
Director  
City Engineer

**REDSTONE GATEWAY PACKAGE I-LAKE F (Bid Package  
I-1 Mass Grading, Fine Grading, Erosion Control, Storm,  
and Pond Liner  
Project No. 65-12-SP23  
February 6, 2013**

**Addendum #3**

All addenda and attachments for the above-referenced project will become part of the contract documents.

**THE BID OPENING HAS BEEN POSTPONED FROM THURSDAY,  
FEBRUARY 7, 2013 AT 10:00 A.M. TO TUESDAY, FEBRUARY 12, 2013 AT  
1:00 P.M. TO BE HELD IN THE 1<sup>ST</sup> FLOOR CONFERENCE ROOM, 320 FOUNTAIN  
CIRCLE, HUNTSVILLE, AL**

**END OF ADDENDUM #3**

The Star of Alabama



# HUNTSVILLE

Kathy Martin, P.E.  
Director  
City Engineer

Urban Development Department  
Engineering Division

**REDSTONE GATEWAY PACKAGE I-LAKE F (Bid Package  
I-1 Mass Grading, Fine Grading, Erosion Control, Storm,  
and Pond Liner  
Project No. 65-12-SP23  
February 8, 2013**

**Addendum #4**

All addenda and attachments for the above-referenced project will become part of the contract documents.

**THE BID OPENING HAS BEEN POSTPONED FROM TO TUESDAY,  
FEBRUARY 12, 2013 AT 1:00 P.M. TO THURSDAY, FEBRUARY 14, 2013 AT 2:00  
P.M. TO BE HELD IN THE 1<sup>ST</sup> FLOOR CONFERENCE ROOM, 320 FOUNTAIN  
CIRCLE, HUNTSVILLE, AL**

**CONTRACTOR QUESTIONS:**

- Q.** The existing CS 10 x 6 has a slope paved headwall. Is there a detail showing how the Tie-In is to be made? Will the existing culvert need to be cut square or will we need to dowel vertically into the SPHW?

**A.** The Package I-1 Contractor should join the proposed and existing culverts by drilling mid depth and epoxy longitudinal #4 bars into existing culvert with HILTI-HIT-HY 150 max with 6" embedment into the existing culvert and 30" embedment into the new proposed culvert at 12" o.c.

The Star of Alabama

2. **Q.** Storm Line G-1 is shown to tie into a precast wing wall end condition. Is there a precast design detail that reflects the necessary modifications required to accommodate this 54" RCP?  
**A.** See Detail on Sheet C7.3-R1 Addendum #4 drawings.
3. **Q.** Will the contractor be allowed to use cast-in-place wing walls in lieu of the ALDOT Standard PCC-524? If so what ALDOT Cast-In Place design standard will be required a 3:1 Slope Wing wall or 1½: 1 Wing wall?  
**A.** Yes. Contractor shall use ALDOT standard detail W6-3:1.
4. **Q.** Will the contractor be allowed to use cast-in-place wing walls in lieu of the ALDOT Standard PCC-524? If so what ALDOT Cast-in-Place design standard will be required a 3:1 Slope Wing wall or 1½: 1 Wing wall?  
**A.** See answers to #3 above.
5. **Q.** Note # 9 on Sheet C5-1-R1 shows waterproofing box culverts 50 ft. past plugs. Will the balance of F-Line also have to be waterproofed since the entire culvert will likely be filled with water after final development?  
**A.** Yes. However the existing Line F (previously installed) is to be made water tight by others. Please note the Package I-1 Contractor is responsible to make the culverts up to permanent pool/water level elevation 632.50' from the point of discharge back to 50' past the earth plugs water tight. The Package I-1 Contractor will also be responsible to make the pipe from the point of discharge back to 50' past the earth plugs water tight.
6. **Q.** Will the contractor be required to remove and haul off the 41 LF of Railroad Track from the Southern Spur for RSA Railroad Access? Will the contractor take possession of this material?  
**A.** No. Rail demolition, dock work, and all concrete on the East end of the rail spur will be by others and is not part of this contract. Please note the excavation and installation of the 32' x 26' concrete paving on the West end is to be installed by the Package I-1 Contractor.
7. **Q.** The east railroad access pad shows an Alternate note for Crusher-Run Graded aggregate. Will the contractor need to include a Concrete Pad Price in the Lump Sum Bid and an Alternate Price for Crusher Run or Vice Versa?  
**A.** No, rail removal, dock work and concrete on the East end of the rail spur will be by others and is not part of this contract. Please note the word "Alternate" should be revised to Option 1-1 on sheet C8.0 and Option 1-1 has been added to the revised bid form for Package I-1. Please note the excavation and installation of the 32' x 26' concrete paving on the West end is to be installed by the Package I-1 Contractor.
8. **Q.** Note # 3 on Sheet C8.0 shows a 6" thick hold down for the Future Gravel Drive and Concrete Pad. Is this 6" hold down from finish Grade or Sub Grade of future work by RSA? If sub-grade what is the thickness of the proposed Gravel Access and Pad?  
**A.** The 6" hold down is from finished grade. The option for crusher-run graded aggregate is 6" thick.

9. **Q.** Can you provide an updated set of plans for the demolition portion of this work detailing what has and hasn't been performed under another contract?
- A.** No the demolition plan will not be re-issued. Please reference the Instructions to Bidders for specific details and scope of work. Please note The Package I-3 Contractor is responsible for the demolition and removal of the existing substation, fence, gravel, copper matting, and overhead lines and poles for the electrical distribution system. The Package I-4 Contractor is responsible for the demolition and removal of the existing culvert required to install J line only. The Package I-1 Contractor will responsible for the demolition and removal of the substation slabs and foundations, storm lines, existing temporary outlet control structure, and existing sloped paved head wall. It should also be noted that the Package I-1 Contractor will be responsible for removing the sidewalks and landscaping required to install the proposed storm drainage improvements and then replacing the sidewalks and landscaping "in like kind" upon completion.
10. **Q.** Sheet C4.0-R-3, has been clouded around, Market Street, what is this revision to? There appears to be no work in this area.
- A.** The clouded area is the removal of utilities which were installed by others and therefore not required or part of this bid.
11. **Q.** Is there any electrical work at all in this project?
- A.** No.
12. **Q.** Can you provide us with a grading and drainage plan that is updated as to what work has already been performed under previous contracts for this project?
- A.** The grading and drainage plan will not be updated. Bidders can visit the site to see what work has been performed or is currently being performed. Please reference Addendum #2 Q&A #13 regarding existing topsoil stockpiles onsite.
13. **Q.** Since the contractor is told where to get the material for the clay liner, if the soil that is to be stockpiled for the clay liner does not meet the specification called out, will this be a change of condition?
- A.** No it is the Bidders/Package I-1 Contractor's responsibility to determine if there is enough onsite material that meets the project requirements or import material if required to complete the project. Please note the contract documents do not specify where to get the material, however Geotechnical Reports for the onsite material have been provided for the Bidders/Package I-1 Contactor's information.
14. **Q.** I assume that the contractor can have this material tested to make sure it meets this specification and if it doesn't then it will be a change of condition?
- A.** Yes the Bidders can test the material to make sure it meets the specifications. See response above to Q&A#13 regarding a change in condition.
15. **Q.** What work is required under the contract that is shown on sheet C8.0?
- A.** The Package I-1 Contractor will responsible for grading and installation of the concrete slab on the west end of the existing concrete unloading area. The Package I-1 Contactor will also be responsible for grading, storm, erosion control, stabilization, etc. on the east end of the rail yard. Review Sheet C8.0 for additional information and Option 1-1.

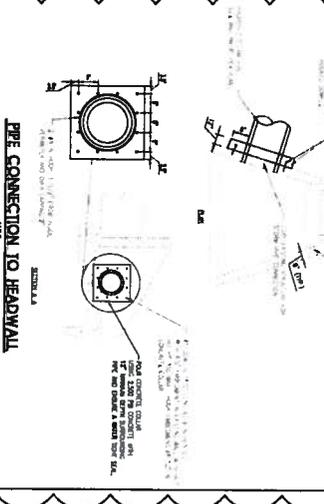
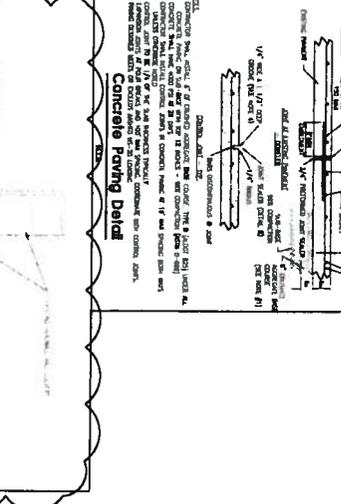
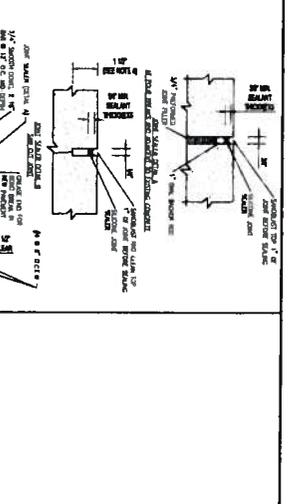
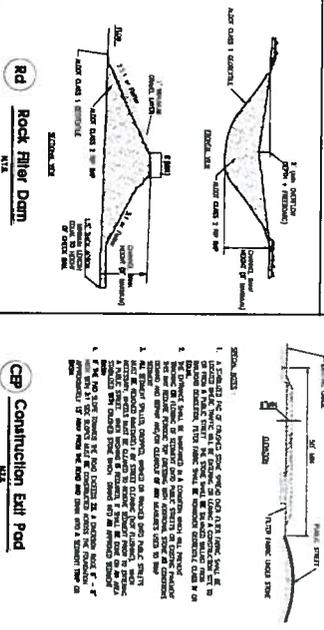
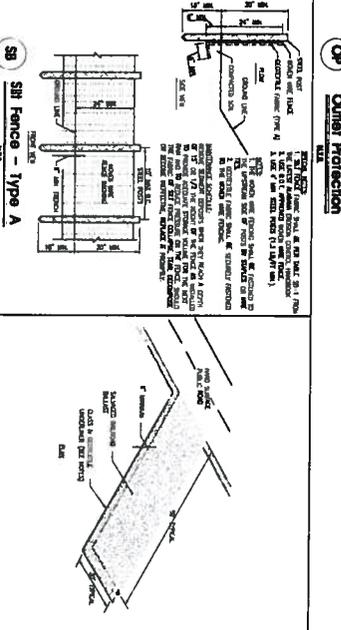
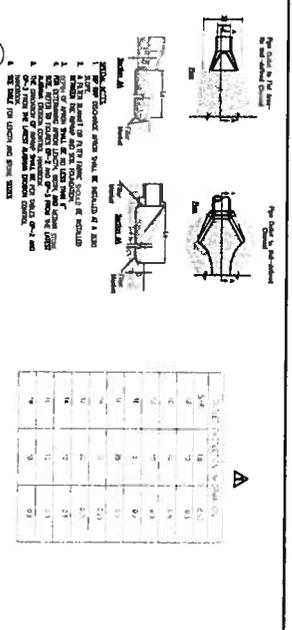
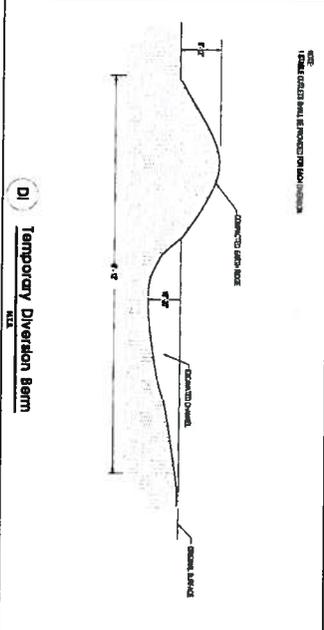
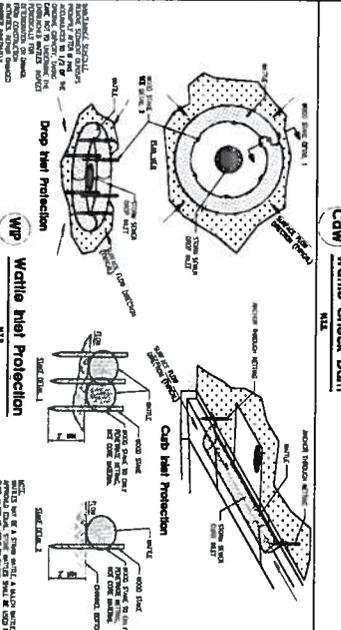
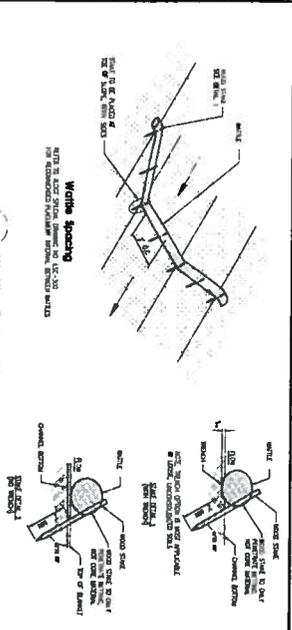
16. **Q.** Will any additional Geotechnical Information be provided?  
**A.** Yes, Building & Earth Sciences Report of Subsurface Exploration and Geotechnical Evaluation Redstone Gateway, Lake F Huntsville, AL Project Number BH13042 dated 2/8/13 has now been posted to the COH website. Please note Sheet C1.0-R1 Grading Notes #18 and Sheet C7.2-R1 Pond Liner & Cover section of the Addendum #4 drawings have been revised per Option 1 and Option 2 on page 12 of the Building & Earth Sciences Report of Subsurface Exploration and Geotechnical Evaluation Redstone Gateway, Lake F Huntsville, AL Project Number BH13042 dated 2/8/13.
17. **Q.** There seems to be some confusion on exactly what is specified for the drainage on the subject project. Some think it is water tight joints and the other thinks it is water proof pipe. Is it water proof pipe or water tight joints?  
**A.** All box culverts and storm pipes in Package I shall be water tight. Cast-in-place concrete box culverts should not have any weep holes in the top or sides with any form work holes being patched/plugged with a waterproof epoxy. Precast box culverts shall have a tongue and groove joint lined with a double run of mastic and inside pipe joint shall be sealed with a non-shrink grout capable of withstanding 15' of head and scour resistant.
18. **Q.** Q&A#1 in Addendum #2 asked if a detail would be provided for the culvert tie-in at Line F-3 to the existing slope culvert on sheet C5.1 and the answer said yes this would be issued in a future Addendum?  
**A.** No detail will be issued. Contractor to insert proposed longitudinal #4's into existing lenton form savers if provided on the existing culverts. If Lenton form saver has not been provided then the contractor should join the proposed and existing culverts by drilling mid depth and epoxy longitudinal #4 bars into existing culvert with HILTI-HIT-HY 150 max with 6" embedment and 30" embedment into proposed culvert at 12" o.c.
19. **Q.** Can a sheepsfoot roller be used on the pond liner?  
**A.** Yes however see note #18 on Sheet C1.0-R1 of the Addendum #4 drawings. For the clay liner to function as planned, it is necessary that the compacted liner be constructed in such a way that no surface indentations exist that could cause the effective thickness of the liner to less than the plan requirement. If the liner is compacted with a sheepsfoot roller, or other device that will create tracks in the liner surface, it must be overfilled so that the bottom of any tracks are above the proposed top of the liner surface. The overfilled liner should then be cut to plan depth with a smooth blade and then final seal rolled with a smooth drum roller.
20. **Q.** What drawings have been revised by this Addendum #4?  
**A.** Revised drawings issued in Addendum #4 are C1.0-R1, C7.2-R1, and C7.3-R1.
21. **Q.** Can the bid date be postponed?  
**A.** Yes the Bid Date has been postponed to Thursday February 14, 2013 at 2:00 pm.

Attachment: Drawings

**END OF ADDENDUM #4**







| NO. | DESCRIPTION             | DATE     | BY | CHECKED | APP. |
|-----|-------------------------|----------|----|---------|------|
| 1   | ISSUED FOR PERMITS      | 02/28/13 |    |         |      |
| 2   | ISSUED FOR CONSTRUCTION | 02/28/13 |    |         |      |
| 3   | ISSUED FOR AS-BUILT     | 02/28/13 |    |         |      |

SEE SHEET C7.3 FOR JUNCTION BOX DETAIL - STR #21

PACKAGE I-1 02-28-13 ADDENDUM #4

**DETAILS**  
**REDSTONE GATEWAY - PACKAGE I**  
**LAKE F**  
**CITY OF HUNTSVILLE**  
**HUNTSVILLE, ALABAMA**

LEBYD  
 CIVIL ENGINEERING  
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 Huntsville, AL 35893  
 Tel: (256) 232-7140

HUNTSVILLE  
 2/09/2013



# HUNTSVILLE

Kathy Martin, P.E.  
Director  
City Engineer

Urban Development Department  
Engineering Division

**REDSTONE GATEWAY PACKAGE I-LAKE F (Bid Package  
I-1 Mass Grading, Fine Grading, Erosion Control, Storm,  
and Pond Liner**

**Project No. 65-12-SP23**

**February 12, 2013**

**Addendum #5**

All addenda and attachments for the above-referenced project will become part of the contract documents.

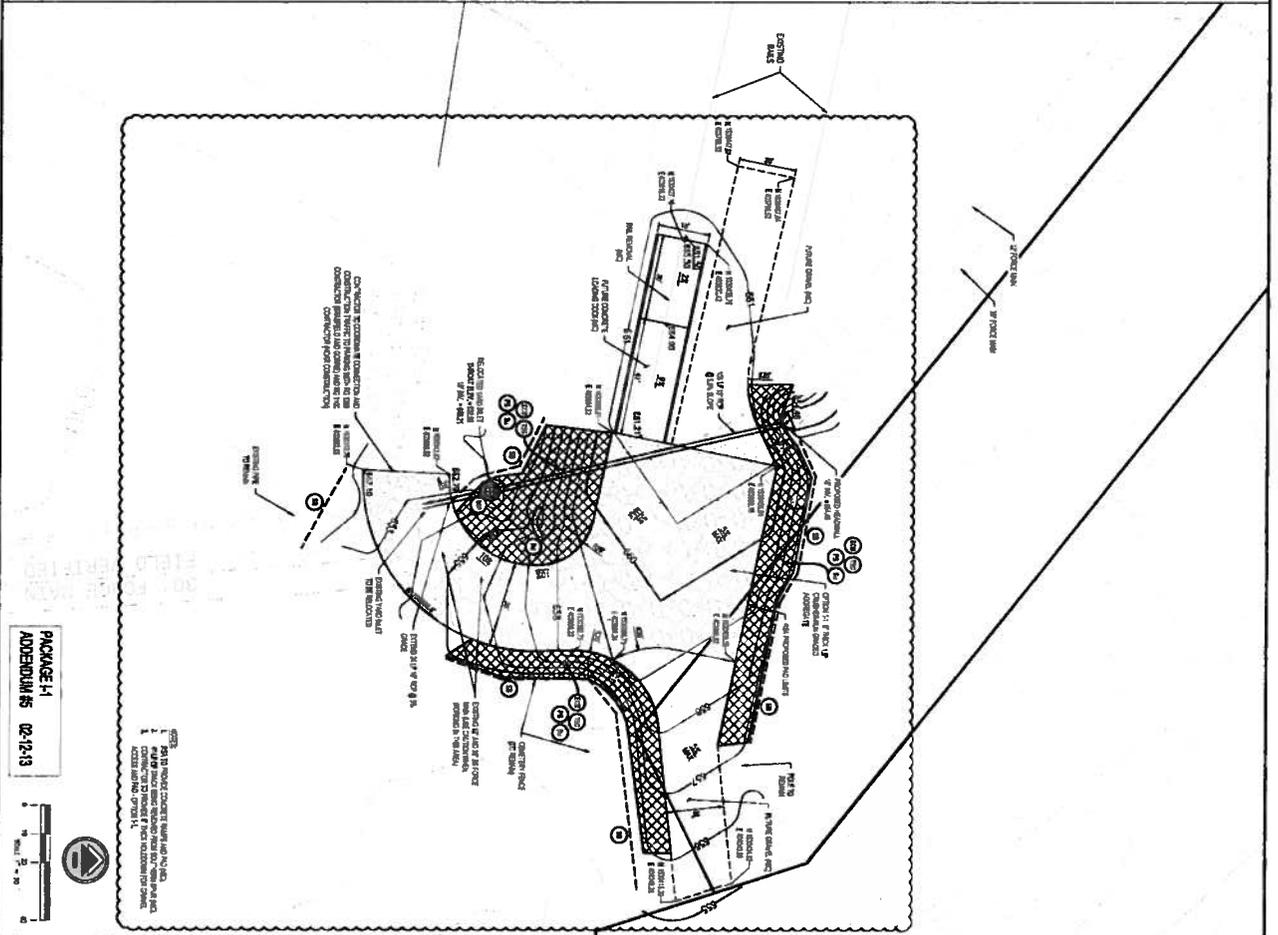
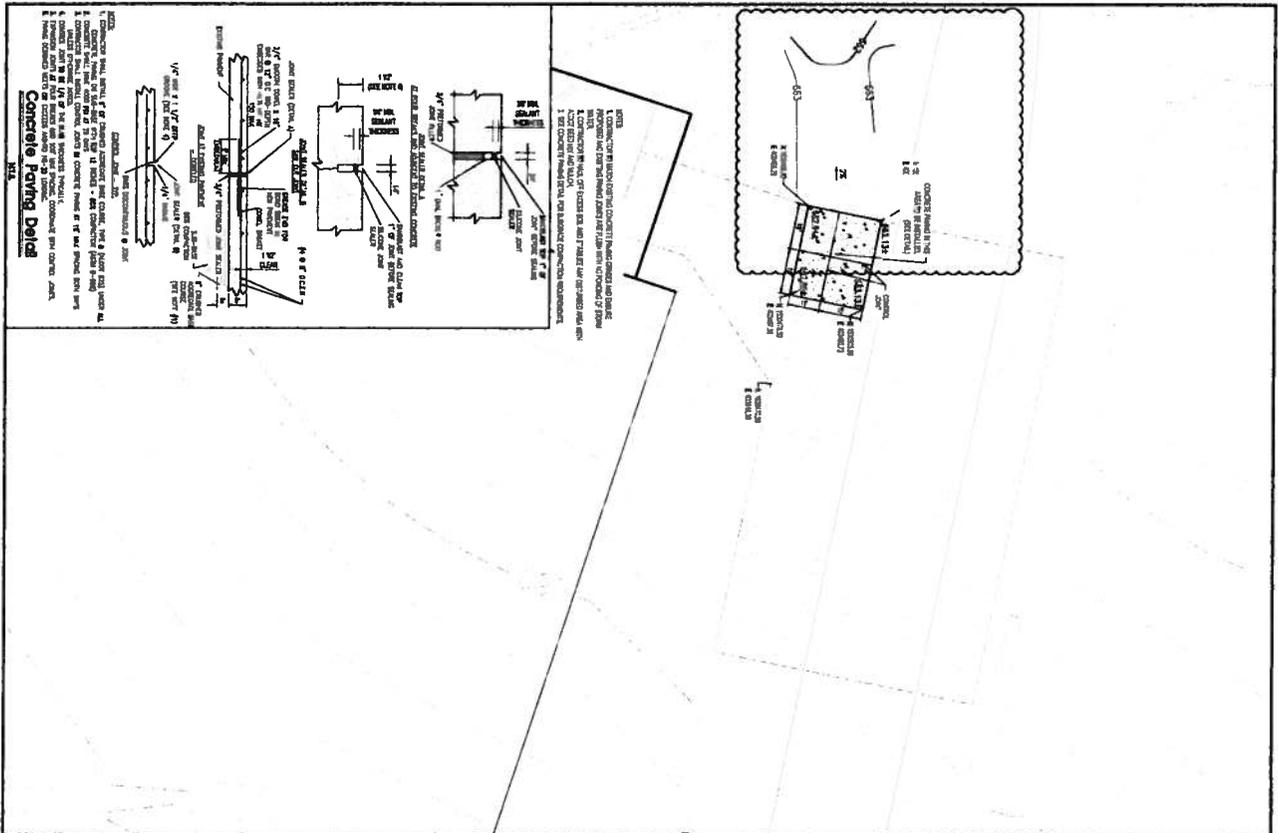
**CONTRACTOR QUESTIONS:**

1. **Q.** There is no erosion control shown on sheet C8.0 is that correct?  
**A.** No, See Sheet C8.0-R1 Addendum #5 drawings for added erosion control.
2. **Q.** When will the revised bid form be issued?  
**A.** See attached revised bid form for Package I-1.
3. **Q.** The location of the existing PM trailer onsite is in conflict with the proposed storm line G-4. Who will be responsible for relocating the trailer?  
**A.** Brasfield & Gorrie, the Project Manager for the City of Huntsville, will be responsible for relocating the trailers prior to the start of Package I-1. However please note the existing temporary gravel road to the PM trailers will remain and can be utilized by the Package I-1 contractor as needed. Fill placement over the existing temporary gravel road will be acceptable, provided it passes proofroll, and placement of fill over the existing temporary gravel road is coordinated with the Owner and Building & Earth Sciences.

Attachments: Drawing  
Revised Bid Form

**END OF ADDENDUM #5**

**The Star of Alabama**



**PACKAGE 11**  
**ADDENDUM 05** 02-12-13

**RSA RAILHEAD ACCESS**  
**REDSTONE GATEWAY - PACKAGE I**  
**LAKE OF HUNTSVILLE**  
**CITY OF HUNTSVILLE**  
**HUNTSVILLE, ALABAMA**

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**LBYD, INC.**  
300 East 7th Street  
Huntsville, AL 35893  
Tel: (256) 533-1144  
Fax: (256) 533-1144

**ATTACHMENT "B" to PROPOSAL  
PROPOSAL FORM**

**PACKAGE I - 1 - Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner  
REDSTONE GATEWAY  
COH PROJECT NO. 65-12-SP23**

| ITEM                                                                  | DESCRIPTION                                                                                                                                                                                                                         | QTY. | UNIT | AMOUNT   |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|----------|
| 1                                                                     | <b>Mobilization</b><br><i>(not to exceed 5% of the total base bid)</i>                                                                                                                                                              | 1    | L.S. | \$ _____ |
| 2                                                                     | <b>Earthwork, Erosion Control, Storm, Pond Liner, and balance of project:</b> <i>(to include all labor, materials, supervision, overhead and profit to complete work as shown and outlined in project plans and specifications)</i> | 1    | L.S. | \$ _____ |
| 3                                                                     | <b>Total Allowances</b><br>Items A thru C (Below)                                                                                                                                                                                   | 1    | L.S. | \$ _____ |
| <b>FOR THE TOTAL BASE BID LUMP SUM PRICE OF<br/>(ITEMS 1 thru 3):</b> |                                                                                                                                                                                                                                     |      |      | \$ _____ |

**ATTACHMENT "B" to PROPOSAL  
PROPOSAL FORM**

**PACKAGE I - 1 - Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner  
REDSTONE GATEWAY  
COH PROJECT NO. 65-12-SP23**

**ALLOWANCES TO BE INCLUDED IN BASE BID TOTAL**

*(Note: Allowances will be used on an as-needed basis. Upon Project Completion, Any Balance will be subtracted from Contract.  
ALL VOLUME MEASUREMENTS TO BE "BANK YARDS" - (IN PLACE MEASUREMENT)*

| ITEM                                        | DESCRIPTION                                                                                                                                                                                                            | QTY.   | UNIT                     | UNIT PRICE | TOTAL AMOUNT |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------|------------|--------------|
| A                                           | <b>Remove Petroleum Contaminated Soils Allowance:</b><br><i>Excavate contaminated soils at old substation, as identified by RSA representative, and haul to RSA soils recycling area within 5 miles of the project</i> | 1,500  | CY                       | \$ _____   | \$ _____     |
| B                                           | <b>Temporary Road Allowance:</b><br><i>Furnish and install, maintain, and remove temporary road with Fabric and 8" of #57 Stone for Additive Change Order</i>                                                          | 3,000  | SY                       | \$ _____   | \$ _____     |
| C                                           | <b>Unsuitable Material Below Cut Line Allowance:</b> <i>Undercut and waste on-site and replace with onsite material for Additive Change Order</i>                                                                      | 15,000 | CY                       | \$ _____   | \$ _____     |
| <b>Total Allowances for Items A thru C:</b> |                                                                                                                                                                                                                        |        |                          |            | \$ _____     |
| <b>OPTION 1</b>                             |                                                                                                                                                                                                                        |        |                          |            |              |
| 1-1                                         | <b>Furnish and Install 6" thick 1.5" Crusher Run Graded Aggregate at end of Rail Spur per Sheet C8.0</b>                                                                                                               |        | <b>ADD / DEDUCT L.S.</b> |            | \$ _____     |

The Apparent Low Bidder(s) will be required to submit, within Two (2) business day after bid opening, a detailed "balanced" breakdown of Bid Items # 1-3 indicating quantities and unit prices. Such unit prices will be the basis for additive and deductive change orders.

**\*Legal Name of Bidder (Company) :** \_\_\_\_\_

**Mailing Address :** \_\_\_\_\_

**By (authorized signature) :** \_\_\_\_\_

**Name (Typed) :** \_\_\_\_\_

**Title :** \_\_\_\_\_

**Date :** \_\_\_\_\_

*\* If other than the individual proprietor, a named member of the Partnership, the President, Vice-President or Secretary of the Corporation, attach written authority to bind the Bidder. Any modification shall be over the initials of the person signing the bid.*

**CERTIFICATION OF COMPLIANCE WITH TITLE 39, CODE OF ALABAMA**

In accordance with Code of Alabama (1975) §39-5-1(b), I hereby certify that the contract with Reed Contracting Services, Inc., in the amount of ONE MILLION EIGHT HUNDRED TWENTY-FIVE THOUSAND FIVE HUNDRED NINETY-EIGHT AND .50/100 DOLLARS (\$1,825,598.50), for Redstone Gateway Package I-1, Mass Grading, Fine Grading, Erosion Control, Storm, and Pond Liner, which is being submitted to the City Council of the City of Huntsville for approval on this the 28th day of February, 2013, has been let in accordance with Code of Alabama, Title 39 and all other applicable provisions.



Robert M. Kelley  
Senior Project Manager  
Brasfield and Gorrie, L.L.C.

**E-VERIFY – NOTICE**

The Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No. 2011-535, Code of Alabama (1975) § 31-13-1 through 31-13-30 (also known as and hereinafter referred to as “ the Alabama Immigration Act”) as amended by Act No. 2012-491 on May 16, 2012 is applicable to all competitively bid contracts with the City of Huntsville. As a condition for the award of a contract and as a term and condition of the contract with the City of Huntsville, in accordance with § 31-13-9 (a) of the Alabama Immigration Act, as amended, any business entity or employer that employs one or more employees shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama.

During the performance of the contract, such business entity or employer shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations. The business entity or employer shall assure that these requirements are included in each subcontract in accordance with §31-13-9(c). Failure to comply with these requirements may result in breach of contract, termination of the contract or subcontract, and possibly suspension or revocation of business licenses and permits in accordance with §31-13-9 (e) (1) & (2).

Code of Alabama (1975) § 31-13-9 (k) requires that the following clause be included in all City of Huntsville contracts that have been competitively bid and is hereby made a part of this contract:

“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.”

\_\_\_\_\_  
Reed Contracting Services, Inc.  
(Company)

BY:   
\_\_\_\_\_  
(Authorized Representative)