



# Request for Proposal Package

**City of Douglasville**

**Mill Village Park Renovation Project**

**RFP 2019-019**

**CONTRACT DOCUMENTS**  
**AND**  
**TECHNICAL SPECIFICATIONS**

**FOR CONSTRUCTION OF**

**MILL VILLAGE PARK**

**Douglasville, Georgia**

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**THIS PROJECT IS FUNDED BY LOCAL FUNDS**

**Prepared for**

City of Douglasville  
6695 Church Street  
Douglasville, Ga. 30134  
Phone (770)920-3000

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**Developed by**

The logo for GMC, consisting of the letters 'G', 'M', and 'C' in a bold, orange, sans-serif font. The letters are slightly spaced out and have a modern, blocky appearance.

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

**October 2019**

## **OWNERSHIP OF DOCUMENTS AND DISCLAIMER**

The Project Manual, Technical Specifications, Drawings, and all other documents relating to this project have been prepared for this individual and particular project, and for the exclusive use of the original Owner, developer or other party so indicated.

Actual project conditions and as-built conditions may vary significantly. Changes made during bidding, negotiations, construction, due to additions or deletions of portions of this project, and/or for other reasons, may not be indicated in these documents.

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## TABLE OF CONTENTS

DIVISION 0	CONTRACTING REQUIREMENTS
00100	Advertisement for Bids
00200	Instructions to Bidders
00250	Instructions for Submitting Bid Proposal
00410	Bid Form
00430	Bid Bond
00450	Form of Qualification of Bidder
00480	Non-Collusion Affidavit
00490	Immigration and Security Form
00510	Notice of Award
00550	Notice to Proceed
00610	Performance Bond
00615	Payment Bond
00620	Certificate of Owner's Attorney
00625	Certificate of Substantial Completion
00640	Contractor Certificate and Release
00940	Work Change Directive
00941	Change Order
00942	Field Order

ARTICLE I

THE CONTRACT AND THE CONTRACT DOCUMENTS .....

- 1.1 The Contract.....
- 1.2 The Contract Documents .....
- 1.3 Entire Agreement .....
- 1.4 No Privity with Others.....
- 1.5 Intent and Interpretation.....
- 1.6 Ownership of Contract Documents .....
- 1.7 Hierarchy of Contract Documents .....

ARTICLE II

THE WORK .....

ARTICLE III

CONTRACT TIME.....

- 3.1 Time and Liquidated Damages .....
- 3.2 Substantial Completion .....
- 3.3 Time is of the Essence .....

ARTICLE IV

CONTRACT PRICE.....

4.1 The Contract Price .....

ARTICLE V

PAYMENT OF THE CONTRACT PRICE.....

5.1 Schedule of Values.....

5.2 Payment Procedure.....

5.3 Withheld Payment .....

5.4 Unexcused Failure to Pay .....

5.5 Substantial Completion.....

5.6 Completion and Final Payment.....

ARTICLE VI

THE OWNER.....

6.1 Information, Services and Things Required from Owner.....

6.2 Right to Stop Work.....

6.3 Owner's Right to Perform Work.....

ARTICLE VII

THE CONTRACTOR.....

7.4 Warranty.....

7.6 Supervision.....

7.7 Schedules.....

7.9 Shop Drawings, Product Data and Samples.....

7.10 Cleaning the Site and the Project.....

7.11 Access to Work.....

7.12 Indemnity.....

7.13 Means, Methods, Techniques, Sequences, Procedures and Safety.....

7.14 Separate Contracts .....

ARTICLE VIII

CONTRACT ADMINISTRATION.....

8.1 The Architect .....

8.2 Architect's Administration.....

8.3 Claims by the Contractor.....

ARTICLE IX

SUBCONTRACTORS.....

9.1 Definition.....

9.2 Award of Subcontracts.....

ARTICLE X

CHANGES IN THE WORK .....

10.1 Changes Permitted.....

10.2 Change Order Defined.....

10.3 Changes in the Contract Price.....

10.4 Effect of Executed Change Order.....

10.5 Notice to Surety; Consent.....

ARTICLE XI

UNCOVERING AND CORRECTING WORK.....

11.1 Uncovering Work.....

11.2 Correcting Work .....

11.3 Owner May Accept Defective or Nonconforming Work.....

ARTICLE XII

CONTRACT TERMINATION .....

12.1 Termination by the Contractor.....

12.2 Termination by the Owner .....

ARTICLE XIII

OWNER'S RIGHT TO SUSPEND CONTRACTOR'S PERFORMANCE.....

ARTICLE XIV

INSURANCE.....

ARTICLE XV

MISCELLANEOUS .....

15.1 Governing Law .....

15.2 Successors and Assigns.....

15.3 Surety Bonds.....

## TECHNICAL SPECIFICATIONS

DIVISION 2	SITE CONSTRUCTION
02200	Site Preparation
02220	Demolition
02230	Top Soil
02300	Earthwork
02370	Erosion and Sedimentation Control
02920	Lawns and Grassing
02921	Sodding
02930	Trees, Shrubs and Ground Covers
DIVISION 3	CONCRETE
03100	Concrete Form and Accessories
03200	Concrete Reinforcement
03305	Cast-In-Place Concrete

## SECTION 00100 RFP ADVERTISEMENT FOR BIDS

<b>Bid Date:</b>	November 22, 2019	<b>Project No</b>	2019-019
<b>Project Name:</b>	Mill Village Park	<b>Technical Contact:</b>	Dale Brasher
<b>Date of Issue:</b>	October 24, 2019	<b>Estimated Project Cost:</b>	N/A

**OWNER**  
 City of Douglasville  
 6695 Church Street  
 Douglasville, GA 30134  
 770-920-3000 Phone

**ENGINEER**  
 Goodwyn Mills and Cawood, Inc.  
 6120 Powers Ferry Rd. NW, Suite 350  
 Atlanta, GA 30339  
 770-952-2481 Phone  
 770-955-1064 Fax

The **City of Douglasville, Georgia** will be receiving separate sealed Bids for all material, labor and equipment for the “**Mill Village Park**”. This includes approximately **demolition of existing park features, new concrete walkway, wooden rail fencing, picnic pavilion, playground and swing, and landscaping** with all related accessories as shown on the plans and called for in the Contract Documents and Technical Specifications. Bids shall be based on Unit Price Items.

The project shall be Substantially Complete within **120** calendar days from the date of notice to proceed of the contract.

There will be a **mandatory** pre-bid meeting at 2:00 pm on Friday, November 8, 2019 at the park site. In the event of inclement weather, the pre-bid meeting will be held at Douglasville City Hall, Conference Room B, at 2:00 pm on November 8, 2019.

All requests for information and clarifications regarding this project shall reference the above invitation name and submitted via e-mail to [procurement1@douglasvillega.gov](mailto:procurement1@douglasvillega.gov) no later than **November 18, 2019 at 5:00 pm EST**. Questions and answers will be issued in the form of an addendum to all interested and will be available on the city’s website, <https://www.douglasvillega.gov/i-want-to/search/rfbs-rfps-and-rfqs>;

It is the bidder’s responsibility to check the website for any addenda issued for this RFP.

The **City of Douglasville** will receive bids until **10:00 AM on November 22, 2019 at 6695 Church Street, Douglasville, GA 30134** Bids received after this time will not be accepted. Bids will be opened and publicly read aloud. All interested parties are invited to attend.

RFP ESTIMATED TIMELINE		
City issues public advertisement of RFP	10/24/19	
Mandatory Pre-bid meeting	11/08/19	2:00 pm EST
Deadline for written questions/requests for clarification	11/18/19	5:00 pm EST
Deadline for submission of Proposals	11/22/19	10:00 am EST
City Council will vote on selection of firm	1/09/20	Subject to change

Bidders must submit one (1) original, three (3) hard/printed-out copies and one (1) electronic copy-thumb drive to the City of Douglasville front desk, in a sealed envelope, clearly addressed and labeled as follows:

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## SECTION 00100 ADVERTISEMENT FOR BIDS

**Attn: Michelle Collings, 6695 Church Street, Douglasville GA 30134**

**RFP: Mill Village Park Project**

Submittals must also include on the sealed envelope label reference **Mill Village Park Project**. The entire submittal should be submitted as one (1) file. Please do not submit individual documents or sections separately.

It is the sole responsibility of the bidder to assure delivery by the specified deadlines to the correct location; the City cannot accept responsibility for incorrect delivery, regardless of reason.

Submittal envelopes will be stamped with date and time of reception and this is the information that will be considered to determine timely submittals and not the required electronic versions submitted via e-mail. No submittals will be accepted after the date and time stipulated above.

A list of firms submitting responsive bids will be available on City of Douglasville website after stated deadline.

All expenses for preparing and submitting responses are the sole cost of the party submitting the response. The City is not obligated to any party to reimburse such expenses. All submittals upon receipt become the property of the City. Labeling information provided in submittals “proprietary” or “confidential” or any other designation of restricted use will not protect the information from public view. Subject to the provisions of the Open Records Act, the bid amounts of the bid documents will remain confidential until final award.

The City of Douglasville reserves the right to cancel this procurement at any time for this pursuit. The City may reject the proposal of any proposer that has not submitted the appropriate requested documentation or waive any and all technicalities, formalities or irregularities. In addition, firms that have previously failed to perform properly or complete on time, contracts of a similar nature with the City of Douglasville, may also be disqualified.

### **Evaluation of Proposals**

The evaluation by the Selection Committee will be based on the Selection Criteria listed below. The City will appoint a committee of key staff members (Selection Committee) to review each response to this RFP and provide a rank list of all the Firms.

- 1. Staffing** – Evaluation of the list of personnel specifically assigned to the proposed project, including their qualifications, overall experience and recent experience on projects of similar nature and complexity to the proposed project. Points: 15
- 2. Experience/Performance** – Review of past performance on City of Douglasville projects or other projects of similar nature and complexity as the proposed project; evaluation of client references whether included in the proposal response or not; overall responsiveness to City’s needs. Points: 25
- 3. Approach** – Evaluation of the overall understanding of the scope of the proposed project; completeness, adequacy and responsiveness to the required information of the request for proposals. Provide in detail the services your firm will be providing. Points: 10
- 4. Fee Proposal** – 50 points

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## **SECTION 00100 ADVERTISEMENT FOR BIDS**

### **Final Selection**

After ranking of the proposers by the Selection Committee, final selection of a successful proposer shall be made by the City's Mayor and Council, which may interview some or all of the proposers.

Contract Documents/Advertisement may be examined at the following locations:

**6695 Church Street, Douglasville, GA 30134**

<https://www.douglasvillega.gov/i-want-to/search/rfbs-rfps-and-rfqs>

**Goodwyn Mills and Cawood. 6120 Powers Ferry Rd. NW, Suite 350, Atlanta, Georgia 30339**

<http://www.gmcnetwork.com/bids>

**Georgia Local Government Access MARKETPLACE at the link below:**

[https://www.glga.org/Bid Listings](https://www.glga.org/Bid%20Listings)

Each BIDDER must deposit with his bid, security in the amount of 5%, and shall be subject to the conditions provided in Section 00200 "INSTRUCTION TO BIDDERS."

No BIDDER may withdraw his bid within sixty (60) days after the date of Bid opening.

Each Bidder is required to submit a "Bid form", "Bid Bond", "Form of Qualification of Bidder", "Non-Collusion Affidavit" and "Immigration and Security Form" as outlined in Section 00250.  
This contract is Local funded.

The **City of Douglasville** reserves the right to waive any informalities or irregularities, or to reject any or all bids and to re-advertise.

Visit <http://www.gmcnetwork.com/bids> for a list of projects out for bid. Then select the appropriate project for a list of bidders and additional bid information.

**END OF SECTION**

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## **SECTION 00250 INSTRUCTIONS FOR SUBMITTING BID PROPOSALS**

Bid Proposal packages are to be submitted on **separate forms** furnished for this purpose. Forms are not to be detached from the Contract Documents, filled out or executed.

Submit as the "Bid" the following:

1. Bid Form – Section 00410
2. Bid Bond – Section 00430
3. Form of Qualification of Bidder – Section 00450
4. Non-Collusion Affidavit – Section 00480
5. Immigration and Security Form – Section 00490
6. Tab the Bid Bond, Base Bid and all Alternates.

Place all of the above in a sealed envelope clearly marked as follows:

### **BID PROPOSAL FOR**

**City of Douglasville  
Mill Village Park**

NOTE: The envelope should bear on the outside the **NAME** and **ADDRESS** of the **QUALIFIED BIDDER**, and **Georgia Utilities Contractors License Number** (if applicable).

If mailed, this envelope should be placed inside the mailing envelope.

Bids will be opened at **10:00 AM EST** on **11/22/19** at **6695 Church Street, Douglasville, GA 30134**.

**END OF SECTION**

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**SECTION 00410  
BID FORM**

**TABLE OF ARTICLES**

Article No.	Page No.
<a href="#"><u>ARTICLE 1 – BID RECIPIENT</u></a> .....	00410-2
<a href="#"><u>ARTICLE 2 – BIDDER’S ACKNOWLEDGMENTS</u></a> .....	00410-2
<a href="#"><u>ARTICLE 3 – BIDDER’S REPRESENTATIONS</u></a> .....	00410-2
<a href="#"><u>ARTICLE 4 – FURTHER REPRESENTATIONS</u></a> .....	00410-4
<a href="#"><u>ARTICLE 5 – ATTACHMENTS TO THIS BID</u></a> .....	00410-5
<a href="#"><u>ARTICLE 6 – DEFINED TERMS</u></a> .....	00410-6
<a href="#"><u>ARTICLE 7 – BID SUBMITTAL</u></a> .....	00410-6

# ARTICLE 1 – BID RECIPIENT

## 1.01 BID RECIPIENT

This Bid is submitted to: **City of Douglasville**  
6695 Church Street,  
Douglasville, GA 30134

This Bid is Submitted From: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Name and Address of Individual, Partnership, or Corporation)

\_\_\_\_\_  
Georgia Utility Contractor No. (if applicable)

This Bid is for: **Mill Village Park**  
11/22/19 **10:00 AM**  
(Date) (Time)

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times Indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

# ARTICLE 2 – BIDDER’S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

# ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

Addendum No.

Addendum Date

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- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all federal, state and local laws and regulations that may affect cost, progress and performance of the Work.
- D. Bidder has carefully studied all reports (if applicable) of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified and reports and drawings of Hazardous Environmental Conditions that have been identified in SC-4.06.
- E. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
- F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
- I. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for

which this Bid is submitted.

- K. Bidder will submit written evidence of its authority to do business in the state where the Project is located not later than the date of its execution of the Agreement.

## **ARTICLE 4 – FURTHER REPRESENTATIONS**

4.01 Bidder further represents that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

## ARTICLE 5 – ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

- A. Bid Bond – Section 00430.
- B. Form of Qualification of Bidder – Section 00450.
- C. Affidavit of Non-Collusion – Section 00480.
- D. Immigration and Security Form – Section 00490.

## ARTICLE 6 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

## ARTICLE 7 – BID SUBMITTAL

### BASE BID

<u>Item No.</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QUANTITY</u>	<u>UNIT OF MEASURE</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
<b>Mill Village Park</b>					
1.	General Conditions & Mobilization	1	L.S.	_____	_____
1a.	Demolition, Grading, & Site Work	1	L.S.	_____	_____
2.	All Playground Accessories, Boulders, Shade Sail, Playground Surfacing	1	L.S.	_____	_____
3.	Concrete Walkway & Surfaces	510	S.Y.	_____	_____
4.	Landscape (Grassing, Shrubs, Trees)	1	L.S.	_____	_____
5.	Picnic Pavilion & Concrete Slab	1	L.S.	_____	_____
6.	Picnic Tables	4	EA.	_____	_____
7.	Benches	5	EA.	_____	_____
8.	Trash Receptacles	3	E.A.	_____	_____
9.	Wooden Rail Fencing	352	L.F.	_____	_____
10.	Steel Tube Arbor	1	L.S.	_____	_____
11.	Stone Seat Wall @ Playground	50	L.F.	_____	_____
<b>TOTAL AMOUNT BASE BID</b>				_____	_____
				(In Figures)	

(In Words)

9.01 This Bid submitted by:

If Bidder is:

An Individual

Name (typed or printed): \_\_\_\_\_

By: \_\_\_\_\_

(Individual's signature)

A Partnership

Partnership Name (typed or printed): \_\_\_\_\_

By: \_\_\_\_\_  
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): \_\_\_\_\_

A Corporation

Corporation Name: \_\_\_\_\_

State of Incorporation: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature -- attach evidence of authority to sign)

Name (typed or printed): \_\_\_\_\_

Title: \_\_\_\_\_  
(CORPORATE SEAL)

Attest \_\_\_\_\_

Date of Authorization to do business in the state of Georgia is \_\_\_/\_\_\_/\_\_\_

**END OF SECTION**

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**SECTION 00430  
BID BOND**

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

\_\_\_\_\_  
BIDDER (Name)

\_\_\_\_\_  
(Address):

\_\_\_\_\_  
SURETY (Name and Address of Principal Place of Business):

\_\_\_\_\_  
OWNER:  
City of Douglasville  
6695 Church Street  
Douglasville, GA 30134

BID  
Bid Due Date: \_\_\_\_\_  
Mill Village Park

BOND

Bond Number: \_\_\_\_\_

Date (Not later than Bid due date): \_\_\_\_\_

Penal Sum: \_\_\_\_\_  
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER

SURETY

\_\_\_\_\_  
Bidder's Name and Corporate Seal (Seal)

\_\_\_\_\_  
Surety's Name and Corporate Seal (Seal)

By: \_\_\_\_\_  
Signature and Title

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title

Attest: \_\_\_\_\_  
Signature and Title

Note: Above addresses are to be used for giving required notice.

Note: Surety companies executing bonds must appear on the Treasury Department's most current list (circular 570 as amended) and be authorized to transact business in the state where the project is locates.

- 1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Surety's liability.
- 2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
- 3. This obligation shall be null and void if:
  - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
  - 3.2. All Bids are rejected by Owner, or
  - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
- 4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been

omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

**END OF SECTION**

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**SECTION 00450**  
**FORM OF QUALIFICATION OF BIDDER**

Name of Bidder \_\_\_\_\_

Address of Bidder \_\_\_\_\_

To: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Gentlemen:

The signer of this affidavit guarantees the truth and accuracy of all statements and information submitted herein in support of its bid proposal to furnish all materials, equipment, and labor, and to perform all work in accordance with the Contract Documents for:

**Mill Village Park**

The undersigned hereby authorizes and requests any public official, engineer, architect, surety company, bank depository, material or equipment manufacturer or distributor, or any person, firm or corporation to furnish any pertinent information requested by Owner's Engineer, **Goodwyn Mills and Cawood, Inc.**, deemed necessary to verify the statements made, information submitted, or regarding the standing and general reputation of the applicant.

The undersigned has not been disqualified by any public agency in the State of Georgia except as is explained as follows: \_\_\_\_\_.

The undersigned further affirms that, if false information is furnished in support of its bid proposal, it can and will be prosecuted to the fullest extent of the law for perjury.

Dated at \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Sworn to and subscribed  
before me this \_\_\_\_\_ day  
of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Name of Organization

BY: \_\_\_\_\_  
Title of Person Signing  
(If Corporation, Affix Seal)

NOTARY PUBLIC:

\_\_\_\_\_

My Commission Expires:

\_\_\_\_\_

PART I - STATEMENT OF EXPERIENCE:

1) Legal Name, Address, and Telephone Number:

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2) Check one: Corporation\_\_\_; Partnership\_\_\_; Individual

3) If a Corporation, state:

Date of Incorporation \_\_\_\_\_

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

Name and Title of Principal Officers	Date of Assuming Position
_____	_____
_____	_____
_____	_____
_____	_____

If an Out-of-State Corporation, currently authorized to do business in Georgia, give date of such authorization: \_\_\_\_\_.

4) If Partnership:

Date of Organization: \_\_\_\_\_

Nature of Partnership (General, Limited, or Association):

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Names and Addresses of Partners	Age of Partner
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5) If an Individual, state -- Name & Address of Owner:

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- 6) Enumerate State, County, or other Public Agencies in which your organization is qualified to perform work by some means of prequalification:

Agency	Trade in Which Qualified	Expiration Date	Approved Amount
<hr/>	<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>	<hr/>

- 7) Describe your organizational structure, including the number of permanent employees engaged in estimating, purchasing, expediting, detailing, and engineering, field supervision, field engineering, and layout:

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(Use extension sheet if necessary)

- 8) Give names & data about any construction projects you have failed to complete:

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(Use extension sheet if necessary)

- 9) Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract? \_\_\_\_\_. If within the last five (5) years, state name of individual, other organization, and reason therefore:

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- 10) Has any officer or partner of your organization ever failed to complete a construction contract handled in his own name? \_\_\_\_\_. If within the last five (5) years, state name of individual, name of owner, and reason therefore:

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- 
- 11) Has your organization, or any officer or partner thereof, ever been party to any criminal litigation as a result of construction methods, costs, etc.? \_\_\_\_\_.  
If yes, state case number, case name, and provide pertinent details, including judgment:

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(Attach extension sheet if necessary)

- 12) Has your organization, or any officer or partner thereof, ever been party to any civil litigation as result of construction methods, costs, etc? \_\_\_\_\_.  
If yes, state case number, case name, and provide pertinent details, including judgment:

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(Attach extension sheet if necessary)

- 13) For Corporations name previous officers, if different from item 3, for each of the last five (5) years. For Partnerships, name for the current principal partner any previous partners, or association in another construction firm within each of the last five (5) years. For sole proprietorship, name for the individual any previous officer position in a corporation, or partner in a partnership for each of the last five (5) years:

20 \_\_\_\_\_  
20 \_\_\_\_\_  
20 \_\_\_\_\_  
20 \_\_\_\_\_  
20 \_\_\_\_\_

14) Indicate type of contracting undertaken by your organization and number of years experience:

As Prime Contractor: Type: \_\_\_\_\_ No. of Years \_\_\_\_\_

Type: \_\_\_\_\_ No. of Years \_\_\_\_\_

As Subcontractor: Type: \_\_\_\_\_ No. of Years \_\_\_\_\_

Type: \_\_\_\_\_ No. of Years \_\_\_\_\_

15) Give any special qualifications of firm members (Registered Engineer, Surveyor, etc.)

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16) List Major Equipment to be Used on this Project and Equipment Condition:

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17) Percentage of Work to be Performed with Own Forces:

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18) Name of Proposed Subcontractors with Whom You Intend to Affiliate. (What phase and percentage of work will each subcontractor perform?)

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- 2) Give contract value of work now pending award to your organization:  
\$ \_\_\_\_\_ State amount requiring bond if awarded: \$ \_\_\_\_\_
- 3) Give the value of any judgments or liens outstanding against your organization:  
\$ \_\_\_\_\_  
Explain: \_\_\_\_\_  
\_\_\_\_\_
- 4) Give names of Surety Companies & Agent under which you have functioned within the last three (3) years:  
20\_\_ \_\_\_\_\_  
20\_\_ \_\_\_\_\_  
20\_\_ \_\_\_\_\_
- 5) Estimate your maximum bonding capacity: \$ \_\_\_\_\_  
How much is unencumbered as of this date? \$ \_\_\_\_\_
- 6) Has any Surety Company refused to write you a bond on any construction work? \_\_\_\_\_  
If yes, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 7) What is the dollar value of the largest project you consider your organization is qualified to undertake?  
\$ \_\_\_\_\_

**END OF SECTION**

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**SECTION 00480  
NONCOLLUSION AFFIDAVIT OF PRIME BIDDER**

State of \_\_\_\_\_

County of \_\_\_\_\_

\_\_\_\_\_, being first duly sworn, deposes and says that:

(1) He is (owner, partner, officer, representative, or agent) of \_\_\_\_\_  
the Bidder that has submitted the attached Bid;

(2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid; including Section 36-91-21 (a) and other relevant parts of the Georgia Code.

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the \_\_\_\_\_  
or any person interested in the proposed Contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) \_\_\_\_\_

Title \_\_\_\_\_

Subscribed and sworn to before me  
this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

Notary Public:

My Commission expires:  
  
\_\_\_\_\_

**END OF SECTION**

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**SECTION 00490  
IMMIGRATION AND SECURITY FORM**

SB529 (The Ga Security and Immigration and Compliance Act) requires contractors to file an affidavit that the contractor and its subcontractors have registered and participate in a federal work authorization program intended to insure that only lawful citizens or lawful immigrants are employed by the contractor or subcontractor. This requirement of SB529 is a phased-in affidavit filing requirement based on the size of the contractor. Contractors with 500 or more employees are required to file an affidavit of compliance beginning 7/1/07. However, because the requirement is set forth in OCGA 13-10-91 which is a part of Chapter 10 of Title 13 governing public works contracts, the affidavit filing requirements of SB529 therefore only apply to public works contract.

- A. In order to insure compliance with the Immigration Reform and Control Act of 1986 (IRCA), D.L. 99-603 and the Georgia Security and Immigration Compliance Act OCGA 13-10-90 et.seq., Contractor must initial one of the sections below:

\_\_\_\_\_ Contractor has 500 or more employees and Contractor warrants that Contractor has complied with the Immigration Reform and Control Act of 1986 (IRCA), D.L. 99-603 and the Georgia Security and Immigration Compliance Act by registering at <https://www.vis-dhs.com/EmployerRegistration> and verifying information of all new employees; and by executing any affidavits required by the rules and regulations issued by the Georgia Department of Labor set forth at Rule 300-10-1-.01 et.seq.

\_\_\_\_\_ Contractor has 100-499 employees and Contractor warrants that no later than July 1, 2008, Contractor will register at <https://www.vis-dhs.com/EmployerRegistration> to verify information of all new employees in order to comply with the Immigration Reform and Control Act of 1986 (IRCA), D.L. 99-603 and the Georgia Security and Immigration Compliance Act; and by executing any affidavits required by the rules and regulations issued by the Georgia Department of Labor set forth at Rule 300-10-1-.01 et. seq.

\_\_\_\_\_ Contractor has 99 or fewer employees and Contractor warrants that no later than July 1, 2009, Contractor will register at <https://www.vis-dhs.com/EmployerRegistration> to verify information of all new employees in order to comply with the Immigration Reform and Control Act of 1986 (IRCA), D.L. 99-603 and the Georgia Security and Immigration Compliance Act; and by executing any affidavits required by the rules and regulations issued by the Georgia Department of Labor set forth at Rule 300-10-1-.01 et. seq.

- B. Contractor warrants that Contractor has included a similar provision in all written agreements with any subcontractors engaged to perform services under this Contract.

\_\_\_\_\_  
Signature Title

Firm Name: \_\_\_\_\_

Street/Mailing Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm, or corporation which is contracting with (name of public employer) has registered with and is participating in a federal work authorization program\* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to this contract with [NAME OF PUBLIC EMPLOYER], contractor will secure from such subcontractor(s) similar verification of compliance with O.C.G.A. 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the [NAME OF THE PUBLIC EMPLOYER] at the time the subcontractor(s) is retained to perform such service.

\_\_\_\_\_  
EEV / Basic Pilot Program\* User Identification Number

\_\_\_\_\_  
BY: Authorized Officer or Agent  
(Contractor Name)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title of Authorized Officer or Agent of Contractor

\_\_\_\_\_  
Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN  
BEFORE ME ON THIS THE  
\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Notary Public  
My Commission Expires:

\* As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV / Basic Pilot Program" operated by the U. S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with [NAME OF CONTRACTOR] on behalf of [NAME OF PUBLIC EMPLOYER] has registered with and is participating in a federal work authorization program\* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

\_\_\_\_\_  
EEV / Basic Pilot Program\* User Identification Number

\_\_\_\_\_  
BY: Authorized Officer or Agent  
(Contractor Name)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title of Authorized Officer or Agent of Contractor

\_\_\_\_\_  
Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN  
BEFORE ME ON THIS THE  
\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Notary Public  
My Commission Expires:

\_\_\_\_\_

\* As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV / Basic Pilot Program" operated by the U. S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

**END OF SECTION**

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**SECTION 00510  
NOTICE OF AWARD**

To: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_ Project: Mill Village Park  
\_\_\_\_\_

The OWNER has considered the BID submitted by you dated \_\_\_\_\_, 20\_\_\_\_\_, for the above described WORK in response to its Advertisement for Bids and Instructions to Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$ \_\_\_\_\_.

You are required by the Instructions to Bidders to execute the Agreement, submit the Payment Bond, Performance Bond and Certificates of Insurance, within fifteen (15) calendar days from the date of this Notice to you.

Failure to comply with these conditions within the time specified will entitle OWNER to consider you in default, annul this Notice of Award and declare your Bid Security forfeited.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

City of Douglasville  
Owner

By \_\_\_\_\_

(s) \_\_\_\_\_

Title \_\_\_\_\_

**ACCEPTANCE OF NOTICE**

Receipt of the above NOTICE OF AWARD is hereby acknowledged by

Dated this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_. \_\_\_\_\_ Contractor

By \_\_\_\_\_

(s) \_\_\_\_\_

Title \_\_\_\_\_

**END OF SECTION**



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**SECTION 00550  
NOTICE TO PROCEED**

To: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_ Project: Mill Village Park  
\_\_\_\_\_

You are notified that the contract Time under the above contract will commence to run on \_\_\_\_\_, 20\_\_\_\_. On this date you are to start performing your obligations under the Contract Documents and you are to achieve Substantial Completion within \_\_\_\_\_ consecutive calendar days thereafter. In accordance with Article 4 of the Agreement, the date to achieve Substantial Completion and readiness for final payment is \_\_\_\_\_, 20\_\_\_\_.

You are required to return an acknowledged copy of this NOTICE TO PROCEED to the OWNER.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

City of Douglasville  
Owner

By \_\_\_\_\_

(s) \_\_\_\_\_

Title \_\_\_\_\_

**ACCEPTANCE OF NOTICE**

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

\_\_\_\_\_  
Contractor

By \_\_\_\_\_

(s) \_\_\_\_\_

Title \_\_\_\_\_

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**END OF SECTION**

**SECTION 00610  
PERFORMANCE BOND**

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

\_\_\_\_\_  
BIDDER (Name)

\_\_\_\_\_  
SURETY (Name and Address of  
Principal Place of Business):

\_\_\_\_\_  
(Address):

OWNER:

CONTRACT:

\_\_\_\_\_  
City of Douglasville

\_\_\_\_\_  
Date

\_\_\_\_\_  
6695 Church Street

\_\_\_\_\_  
Amount

\_\_\_\_\_  
Douglasville, Ga 30134

\_\_\_\_\_  
Description

BOND  
Bond Number: \_\_\_\_\_

Date (Not earlier than Contract Date): \_\_\_\_\_

Amount: \_\_\_\_\_

**Modifications to this Bond Form:** \_\_\_\_\_

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

SURETY

Company: \_\_\_\_\_

\_\_\_\_\_  
Surety's Name and Corporate Seal  
(Seal)

Signature: \_\_\_\_\_ (Seal)  
Name and Title

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Print Name: \_\_\_\_\_

Attest: \_\_\_\_\_  
Signature and Title

CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_(Seal)  
Name and Title:

SURETY

\_\_\_\_\_(Seal)  
Surety's Name and Corporate Seal

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title:

Note: Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

- 1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.
- 2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.
- 3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
  - 3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
  - 3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and
  - 3.3. Owner has agreed to pay the Balance of the Contract Price to:
    - 1. Surety in accordance with the terms of the Contract;
    - 2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.
- 4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:
  - 4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
  - 4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
  - 4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for

performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- a. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefore to Owner; or
- b. Deny liability in whole or in part and notify Owner citing reasons therefore.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act

under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction

in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
12. Definitions.
  - 12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
  - 12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all

Contract Documents and changes thereto.

- 12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
- 12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

## **END OF SECTION**

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**SECTION 00615  
PAYMENT BOND**

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

\_\_\_\_\_  
BIDDER (Name)

\_\_\_\_\_  
SURETY (Name and Address of  
Principal Place of Business):

\_\_\_\_\_  
(Address):

OWNER:

CONTRACT:

\_\_\_\_\_  
City of Douglasville

\_\_\_\_\_  
6695 Church Street

\_\_\_\_\_  
Douglasville, Ga 30134

\_\_\_\_\_  
Date

\_\_\_\_\_  
Amount

\_\_\_\_\_  
Description

BOND

Bond Number: \_\_\_\_\_

Date (Not earlier than Contract Date): \_\_\_\_\_

Amount: \_\_\_\_\_

Modifications to this Bond Form: \_\_\_\_\_

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Company: \_\_\_\_\_

\_\_\_\_\_  
Surety's Name and Corporate Seal  
(Seal)

Signature: \_\_\_\_\_ (Seal)  
Name and Title

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Print Name: \_\_\_\_\_

(Space is provided below for signatures of additional parties, if required.)

Attest: \_\_\_\_\_  
Signature and Title

CONTRACTOR AS PRINCIPAL  
Company:

SURETY

Signature: \_\_\_\_\_(Seal)  
Name and Title:

\_\_\_\_\_(Seal)  
Surety's Name and Corporate Seal

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title:

Note: Surety companies executing bonds must appear on the Treasury Department's most Current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

2. With respect to Owner, this obligation shall be null and void if Contractor:

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and

4. Surety shall have no obligation to Claimants under this Bond until:

2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims,

4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice

thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and

2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and

3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the

amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses

shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein.

The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

## 15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

## END OF SECTION

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**SECTION 00620**  
**CERTIFICATE OF OWNER'S ATTORNEY**

I, the undersigned, \_\_\_\_\_, the duly authorized and acting legal representative of \_\_\_\_\_ do hereby certify as follows:

I have examined the attached contract(s), surety bonds, certificate of insurance, and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

By \_\_\_\_\_

(s) \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

**END OF SECTION**

# SECTION 00625 CERTIFICATE OF SUBSTANTIAL COMPLETION

Project: Mill Village Park	Owner: City of Douglasville	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.: LATL190006

**This [tentative] [definitive] Certificate of Substantial Completion applies to:**

- All Work under the Contract Documents:
  The following specified portions:

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\_\_\_\_\_ Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared.

A [tentative] [revised tentative] [definitive] list of items to be completed or corrected, is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

**The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:**

- Amended Responsibilities
  Not Amended

Owner's Amended Responsibilities:

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Contractor's Amended Responsibilities:

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The following documents are attached to and made part of this Certificate:

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This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

\_\_\_\_\_  
Executed by Engineer \_\_\_\_\_ Date

\_\_\_\_\_  
Accepted by Contractor \_\_\_\_\_ Date

\_\_\_\_\_  
Accepted by Owner \_\_\_\_\_ Date

**END OF SECTION**

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**SECTION 00640**  
**CONTRACTOR'S CERTIFICATE AND RELEASE**

FROM: \_\_\_\_\_  
(Name of Contractor)

TO: \_\_\_\_\_

REFERENCE PROJECT NO. \_\_\_\_\_ ENTERED INTO THE \_\_\_\_\_ DAY  
OF \_\_\_\_\_, 20\_\_, BETWEEN \_\_\_\_\_,

AND \_\_\_\_\_  
(Name of Contractor)

OF \_\_\_\_\_  
(City) (State)

FOR: \_\_\_\_\_,

PROJECT NO. \_\_\_\_\_,

LOCATED IN \_\_\_\_\_.

KNOW ALL MEN BY THESE PRESENTS:

1. The undersigned hereby certifies that there is due from and payable by the OWNER to the Contractor, under the contract and duly approved Change Orders and modifications the balance of \$\_\_\_\_\_.
2. The undersigned further certifies that in addition to the amount set forth in paragraph 1, there are outstanding and unsettled the following items which he claims are just and due and owing by the \_\_\_\_\_ to the Contractor:  
(Name of OWNER)
  - (a) \_\_\_\_\_
  - (b) \_\_\_\_\_
  - (c) \_\_\_\_\_
  - (d) \_\_\_\_\_(Itemize claims and amounts due) (If none, so state)
3. The undersigned further certifies that all work required under this contract including work required under change orders numbers \_\_\_\_\_ has been performed in accordance with the terms thereof, and that there are no unpaid claims for materials, supplies or equipment and no claims of laborers or mechanics for unpaid wages arising out of the performance of this contract, and that the wage rates paid by the Contractor and all Subcontractors were in conformity with the contract provisions relating to said wage rates.

4. Except for the amounts stated under paragraphs 1 and 2 hereof, the undersigned has received from \_\_\_\_\_ all sums of money payable to the undersigned under or pursuant to the above mentioned contract or any modification or change thereof.
  
5. That in consideration of the payment of the amount stated in paragraph 1 hereof the undersigned does hereby release \_\_\_\_\_ from any and all claims arising under or by virtue of this contract, except the amount listed in paragraph 2 hereof; provided, however, that if for any reason, \_\_\_\_\_ does not pay in full the amount stated in paragraph 1 hereof, said deduction shall not affect the validity of this release, but the amount so deducted shall be automatically included under paragraph 2 as an amount which the Contractor has not released but will release upon payment thereof. The Contractor further certifies that upon the payment of the amount listed in paragraph 2 hereof, and of any amount which may be deducted from paragraph 1 hereof, he will release \_\_\_\_\_ from any and all claims of any nature whatsoever arising out of said contract or modification thereof, and will execute such further releases or assurances as the \_\_\_\_\_ may request.

IN WITNESS WHEREOF, the undersigned has signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Signature (SEAL)

\_\_\_\_\_  
Title of Officer

\_\_\_\_\_, being first duly sworn on oath, deposes and says that he is the  
(Affiant)

\_\_\_\_\_ of the \_\_\_\_\_,  
Title Name of Company

second, that he has read the foregoing certificate by him subscribed as \_\_\_\_\_  
Title  
of \_\_\_\_\_.  
Name of Company

Affiant further states that the matters and things stated therein are, to the best of his knowledge and belief, true. \_\_\_\_\_  
(Affiant)

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

My Commission expires \_\_\_\_\_  
(Notary)

\_\_\_\_\_  
(Date)

**END OF SECTION**

# SECTION 00940 WORK CHANGE DIRECTIVE

Date of Issuance: \_\_\_\_\_ Effective Date: \_\_\_\_\_

Project: Mill Village Park	Owner: City of Douglasville	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.: LATL190006

**You are directed to proceed promptly with the following change(s):**

Item No.	Description

**Attachments (list documents supporting change):**

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**Purpose for Work Change Directive:**

- Authorization for Work described herein to proceed on the basis of Cost of the Work due to:
- Nonagreement on pricing of proposed change.
- Necessity to expedite Work described herein prior to agreeing to changes on Contract Price and Contract Time.

**Estimated change in Contract Price and Contract Times:**

Contract Price \$ \_\_\_\_\_ (increase/decrease)      Contract Time \_\_\_\_\_ days (increase/decrease)

If the change involves an increase, the estimated amounts are not to be exceeded without further authorization.

Recommended for Approval by Engineer:	Date
Authorized for Owner by:	Date
Accepted for Contractor by:	Date
Approved by Funding Agency (if applicable):	Date:

**END OF SECTION**





**THE CONTRACT FOR CONSTRUCTION AND  
INCORPORATED GENERAL CONDITIONS**

This Agreement is made by and between \_\_\_\_\_  
\_\_\_\_\_  
(hereinafter referred to as the "Owner") and \_\_\_\_\_  
\_\_\_\_\_  
(hereinafter referred to as the "Contractor") under seal for construction of \_\_\_\_\_  
\_\_\_\_\_  
(hereinafter referred to as the "Project"), the Owner and the Contractor hereby agree as follows:

**ARTICLE I**

**THE CONTRACT AND THE CONTRACT DOCUMENTS**

**1.1 The Contract**

1.1.1 The Contract between the Owner and the Contractor, of which this Agreement is a part, consists of the Contract Documents. It shall be effective on the date this Agreement is executed by the last party to execute it.

**1.2 The Contract Documents**

1.2.1 The Contract Documents consist of this Agreement, the Specifications, the Drawings, all Change Orders and Field Orders issued hereafter, any other amendments hereto executed by the parties hereafter, together with the following (if any):

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

Documents not enumerated in this Paragraph 1.2 are not Contract Documents and do not form part of this Contract.

**1.3 Entire Agreement**

1.3.1 This Contract, together with the Contractor's performance and payment bonds for the Project, constitute the entire and exclusive agreement between the Owner and the Contractor with reference to the Project. Specifically, but without limitation, this Contract supersedes any bid documents and all prior written or oral communications, representations and negotiations, if any, between the Owner and Contractor.

## **1.4 No Privity with Others**

1.4.1 Nothing contained in this Contract shall create, or be interpreted to create, privity or any other contractual agreement between the Owner and any person or entity other than the Contractor.

## **1.5 Intent and Interpretation**

1.5.1 The intent of this Contract is to require complete, correct and timely execution of the Work. Any Work that may be required, implied or inferred by the Contract Documents, or any one or more of them, as necessary to produce the intended result shall be provided by the Contractor for the Contract Price.

1.5.2 This Contract is intended to be an integral whole and shall be interpreted as internally consistent. What is required by any one Contract Document shall be considered as required by the Contract.

1.5.3 When a word, term or phrase is used in this Contract, it shall be interpreted or construed, first, as defined herein; second, if not defined, according to its generally accepted meaning in the construction industry; and third, if there is no generally accepted meaning in the construction industry, according to its common and customary usage.

1.5.4 The words "include", "includes", or "including", as used in this Contract, shall be deemed to be followed by the phrase, "without limitation".

1.5.5 The specification herein of any act, failure, refusal, omission, event, occurrence or condition as constituting a material breach of this Contract shall not imply that any other, non-specified act, failure, refusal, omission, event, occurrence or condition shall be deemed not to constitute a material breach of this Contract.

1.5.6 Words or terms used as nouns in this Contract shall be inclusive of their singular and plural forms, unless the context of their usage clearly requires a contrary meaning.

1.5.7 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, error or 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 Architect 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 Architect to only prepare documents for the Project, including the Drawings and Specifications 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.

1.5.8 Neither the organization of any of the Contract Documents into divisions, sections, paragraphs, articles, (or other categories), nor the organization or arrangement of the Design, shall control the Contractor in dividing the Work or in establishing the extent or scope of the Work to be performed by Subcontractors.

## **1.6 Ownership of Contract Documents**

1.6.1 The Contract Documents, and each of them, shall remain the property of the Owner. The Contractor shall have the right to keep one record set of the Contract Documents upon completion of the Project; provided, however, that in no event shall Contractor use, or permit to be used, any or all of such Contract Documents on other projects without the Owner's prior written authorization.

## **1.7 Hierarchy of Contract Documents**

1.7.1 In the event of any conflict, discrepancy, or inconsistency among any of the Contract Documents, the following hierarchy shall control: (a) as between figures given on drawings and the scaled measurements, the figures shall govern; (b) as between large scale drawings and small scale drawings, the large scale shall govern; (c) as between drawings and specifications, the requirements of the specifications shall govern; (d) as between the Contract for Construction and Incorporated General Conditions and the specifications, the requirements of the Contract for Construction and Incorporated General Conditions shall govern. As set forth hereinabove, any and all conflicts, discrepancies, or inconsistencies shall be immediately reported to the architect in writing by the contractor.

## **ARTICLE II**

### **THE WORK**

**2.1** The Contractor shall perform all of the Work required, implied or reasonably inferable from, this Contract.

**2.2** The term "Work" shall mean whatever is done by or required of the Contractor to perform and complete its duties under this Contract, including the following: construction of the whole or a designated part of the Project; furnishing of any required surety bonds and insurance; and the provision or furnishing of labor, supervision, services, materials, supplies, equipment, fixtures, appliances, facilities, tools, transportation, storage, power, permits and licenses required of the

Contractor, fuel, heat, light, cooling and all other utilities as required by this Contract. The Work to be performed by the Contractor is generally described as follows:

Demolition of existing park features, new concrete walkway, wooden rail fencing, picnic pavilion, playground and swing, and landscaping with all related accessories as shown on the plans and called for in the Contract Documents and Technical Specifications.

### **ARTICLE III**

#### **CONTRACT TIME**

##### **3.1 Time and Liquidated Damages**

3.1.1 The Contractor shall commence the Work *within 10 working days after written Notice to Proceed* and shall achieve Substantial Completion of the Work no later than *120 CALENDAR DAYS*. The number of calendar days from the date on which the Work is permitted to proceed, through the date set forth for Substantial Completion, shall constitute the "Contract Time."

3.1.2 The Contractor shall pay the Owner the sum of \$ 500 per day for each and every calendar day of unexcused delay in achieving Substantial Completion beyond the date set forth herein for Substantial Completion of the Work. Any sums due and payable hereunder by the Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by the Owner, estimated at or before the time of executing this Contract. When the Owner reasonably believes that Substantial Completion will be unexcusably delayed, the Owner shall be entitled, but not required, to withhold from any amounts otherwise due the Contractor an amount then believed by the Owner to be adequate to recover liquidated damages applicable to such delays. If and when the Contractor overcomes the delay in achieving Substantial Completion, or any part thereof, for which the Owner has withheld payment, the Owner shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages.

##### **3.2 Substantial Completion**

3.2.1 "Substantial Completion" shall mean that stage in the progression of the Work when the Work is sufficiently complete in accordance with this Contract that the Owner can enjoy beneficial use and occupancy of the Work and can utilize the Work for its intended purpose. Partial use or occupancy of the Project shall not result in the Project being deemed substantially complete, and such partial use or occupancy shall not be evidence of Substantial Completion.

**3.3 Time is of the Essence**

3.3.1 All limitations of time set forth in the Contract Documents are of the essence of this Contract.

**ARTICLE IV**  
**CONTRACT PRICE**

**4.1 The Contract Price**

4.1.1 The Owner shall pay, and the Contractor shall accept, as full and complete payment for all of the Work required herein, the fixed sum of (C\$ \_\_\_\_\_) \_\_\_\_\_ - The sum set forth in this Paragraph 4.1.1 shall constitute the Contract Price which shall not be modified except by Change Order as provided in this Contract.

**BASE BID**

Item <u>No.</u> <u>DESCRIPTION</u>	<u>ESTIMATED QUANTITY</u>	<u>UNIT OF MEASURE</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
<b>Mill Village Park</b>				
1. General Conditions & Mobilization	1	L.S.	_____	_____
1a. Demolition, Grading, & Site Work	1	L.S.	_____	_____
2. All Playground Accessories, Boulders, Shade Sail, Playground Surfacing	1	L.S.	_____	_____
3. Concrete Walkway & Surfaces	510	S.Y.	_____	_____
4. Landscape (Grassing, Shrubs, Trees)	1	L.S.	_____	_____
5. Picnic Pavilion & Concrete Slab	1	L.S.	_____	_____
6. Picnic Tables	4	EA.	_____	_____
7. Benches	5	EA.	_____	_____
8. Trash Receptacles	3	E.A.	_____	_____
9. Wooden Rail Fencing	352	L.F.	_____	_____
10. Steel Tube Arbor	1	L.S.	_____	_____
11. Stone Seat Wall @ Playground	50	L.F.	_____	_____

**TOTAL AMOUNT BASE BID**

(In Figures)

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(In Words)

## ARTICLE V

### PAYMENT OF THE CONTRACT PRICE

#### 5.1 Schedule of Values

5.1.1 Within ten (10) calendar days of the effective date hereof, the Contractor shall submit to the Owner and to the Architect a Schedule of Values allocating the Contract Price to the various portions of the Work. The Contractor's Schedule of Values shall be prepared in such form, with such detail, and supported by such data as the Architect or the Owner may require to substantiate its accuracy. The Contractor shall not imbalance its Schedule of Values nor artificially inflate any element thereof. The violation of this provision by the Contractor shall constitute a material breach of this Contract. The Schedule of Values shall be used only as a basis for the Contractor's Applications for Payment and shall only constitute such basis after it has been acknowledged in writing by the Architect and the Owner.

#### 5.2 Payment Procedure

5.2.1 The Owner shall pay the Contract Price to the Contractor as provided below.

5.2.2 **Progress Payments** -- Based upon the Contractor's Applications for Payment submitted to the Architect and upon Certificates for Payment subsequently issued to the Owner by the Architect, the Owner shall make progress payments to the Contractor on account of the Contract Price.

5.2.3 On or before the 30 day of each month after commencement of the Work, the Contractor shall submit an Application for Payment for the period ending the 25 day of the month to the Architect in such form and manner, and with such supporting data and content, as the Owner or the Architect may require. Therein, the Contractor may request payment for ninety percent (90%) of that portion of the Contract Price properly allocable to Contract requirements properly provided, labor, materials and equipment properly incorporated in the Work plus ninety percent (90%) of that portion of the Contract Price properly allocable to materials or equipment properly stored on-site (or elsewhere if approved in advance in writing by the Owner) for subsequent incorporation in the Work, less the total amount of previous payments received from the Owner. Payment for stored materials and equipment shall be conditioned upon the Contractor's proof satisfactory to the Owner, that the Owner has title to such materials and equipment and shall include proof of required insurance. Such Application for Payment shall be signed by the Contractor and shall constitute the Contractor's representation that the Work has progressed to the level for which payment is requested in accordance with the Schedule of Values, that the Work has been properly installed or performed in full accordance with this Contract, and that the Contractor knows of no reason why payment should not be made as requested. Thereafter, the Architect will review the Application for Payment and may also

review the Work at the Project site or elsewhere to determine whether the quantity and quality of the Work is as represented in the Application for Payment and is as required by this Contract. The Architect shall determine and certify to the Owner the amount properly owing to the Contractor. The Owner shall make partial payments on account of the Contract Price to the Contractor within thirty (30) days following the Architect's receipt of each Application for Payment. The amount of each partial payment shall be the amount certified for payment by the Architect less such amounts, if any, otherwise owing by the Contractor to the Owner or which the Owner shall have the right to withhold as authorized by this Contract. The Architect's certification of the Contractor's Application for Payment shall not preclude the Owner from the exercise of any of its rights as set forth in Paragraph 5.3 hereinbelow. PROVIDED, HOWEVER, that when fifty (50) percent of the contract value, including change orders and other additions to the contract value, provided for by the Contract Documents is due, and the manner of completion of the contract Work and its progress are reasonably satisfactory to the Owner, the Owner shall withhold no more retainage. At the discretion of the Owner, and with the approval of the Contractor, the retainage of any subcontractor may be released separately as the subcontractor completes its work. If, however, after discontinuing the retention, the Owner determines that the Work is unsatisfactory or has fallen behind schedule, retention may be resumed at the previous level. If retention is resumed by the Owner, the Contractor and subcontractors shall be entitled to resume withholding retainage accordingly. The rights of the Owner set forth herein to retainage are in addition to all of the other rights and remedies of the Owner set forth in this Agreement.

5.2.4 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which payments have been received from the Owner shall be free and clear of liens, claims, security interest or other encumbrances in favor of the Contractor or any other person or entity whatsoever.

5.2.5 The Contractor shall promptly pay each Subcontractor out of the amount paid to the Contractor on account of such Subcontractor's Work, the amount to which such Subcontractor is entitled. In the event the Owner becomes informed that the Contractor has not paid a Subcontractor as herein provided, the Owner shall have the right, but not the duty, to issue future checks in payment to the Contractor of amounts otherwise due hereunder naming the Contractor and such Subcontractor as joint payees. Such joint check procedure, if employed by the Owner, shall create no rights in favor of any person or entity beyond the right of the named payees to payment of the check and shall not be deemed to commit the Owner to repeat the procedure in the future.

5.2.6 No progress payment, nor any use or occupancy of the Project by the Owner, shall be interpreted to constitute an acceptance of any Work not in strict accordance with this Contract.

### 5.3 **Withheld Payment**

5.3.1 The Owner may decline to make payment, may withhold funds, and, if necessary, may demand the return of some or all of the amounts previously paid to the Contractor, to protect the Owner from loss because of:

- (a) defective Work not remedied by the Contractor nor, in the opinion of the Owner, likely to be remedied by the Contractor;
- (b) claims of third parties against the Owner or the Owner's property;
- (c) failure by the Contractor to pay Subcontractors or others in a prompt and proper fashion;
- (d) evidence that the balance of the Work cannot be completed in accordance with the Contract for the unpaid balance of the Contract Price;
- (e) evidence that the Work will not be completed in the time required for substantial or final completion;
- (f) persistent failure to carry out the Work in accordance with the Contract;
- (g) damage to the Owner or a third party to whom the Owner is, or may be, liable.

In the event that the Owner makes written demand upon the Contractor for amounts previously paid by the Owner as contemplated in this Subparagraph 5.3.1, the Contractor shall promptly comply with such demand.

### 5.4 **Unexcused Failure to Pay**

5.4.1 If within forty-five (45) days after the date established herein for payment to the Contractor by the Owner, the Owner, without cause or basis hereunder, fails to pay the Contractor any amount then due and payable to the Contractor, then the Contractor may after seven (7) additional days' written notice to the Owner and the Architect, and without prejudice to any other available rights or remedies it may have, stop the Work until payment of those amounts due from the Owner have been received. Any payment not made within forty-five (45) days after the date due shall bear interest at the rate of four percent (4%) per annum.

### 5.5 **Substantial Completion**

5.5.1 When the Contractor believes that the Work is substantially complete, the Contractor shall submit to the Architect a list of items to be completed or corrected. When the Architect on the basis

of an inspection determines that the Work is in fact substantially complete, it will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for Project security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. The Certificate of Substantial Completion shall be submitted to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in such certificate. Upon Substantial Completion of the Work, and execution by both the Owner and the Contractor of the Certificate of Substantial Completion, the Owner shall pay the Contractor an amount sufficient to increase total payments to the Contractor to one hundred percent (100%) of the Contract Price less two hundred percent (200%) of the reasonable cost as determined by the Owner and the Architect for completing all incomplete Work, correcting and bringing into conformance all defective and nonconforming Work, and handling all unsettled claims.

## **5.6 Completion and Final Payment**

5.6.1 When all of the Work is finally complete and the Contractor is ready for a final inspection, it shall notify the Owner and the Architect thereof in writing. Thereupon, the Architect will make final inspection of the Work and, if the Work is complete in full accordance with this Contract and this Contract has been fully performed, the Architect will promptly issue a final Certificate for Payment certifying to the Owner that the Project is complete and the Contractor is entitled to the remainder of the unpaid Contract Price, less any amount withheld pursuant to this Contract. Guarantees required by the Contract shall commence on the date of Final Completion of the Work. If the Architect is unable to issue its final Certificate for Payment and is required to repeat its final inspection of the Work, the Contractor shall bear the cost of such repeat final inspection(s) which cost may be deducted by the Owner from the Contractor's final payment.

5.6.1.1 If the Contractor fails to achieve final completion within the time fixed therefor by the Architect in its Certificate of Substantial Completion, the Contractor shall pay the Owner the sum of \$ \_\_\_\_\_ per day for each and every calendar day of unexcused delay in achieving final completion beyond the date set forth herein for final completion of the Work. Any sums due and payable hereunder by the Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by the Owner, estimated at or before the time of executing this Contract. When the Owner reasonably believes that final completion will be unexcusably delayed, the Owner shall be entitled, but not required, to withhold from any amounts otherwise due the Contractor an amount then believed by the Owner to be adequate to recover liquidated damages applicable to such delays. If and when the Contractor overcomes the delay in achieving final completion, or any part thereof, for which the Owner has withheld payment, the Owner shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages.

5.6.2 The Contractor shall not be entitled to final payment unless and until it submits to the Architect and Owner all documents required by the Contract, including, but not limited to, its affidavit that all payrolls, invoices for materials and equipment, and other liabilities connected with

the Work for which the Owner, or the Owner's property might be responsible, have been fully paid or otherwise satisfied; releases and waivers of lien from all Subcontractors of the Contractor and of any and all other parties required by the Architect or the Owner; consent of Surety, if any, to final payment. If any third party fails or refuses to provide a release of claim or waiver of lien as required by the Owner, the Contractor shall furnish a bond satisfactory to the Owner to discharge any such lien or indemnify the Owner from liability.

5.6.3 The Owner shall make final payment of all sums due the Contractor within thirty (30) days of the Architect's execution of a final Certificate for Payment.

5.6.4 Acceptance of final payment shall constitute a waiver of all claims against the Owner by the Contractor except for those claims previously made in writing against the Owner by the Contractor, pending at the time of final payment, and identified in writing by the Contractor as unsettled at the time of its request for final payment.

## **ARTICLE VI THE**

### **OWNER**

#### **6.1 Information, Services and Things Required from Owner**

6.1.1 If the Contractor requests in writing, the Owner shall furnish to the Contractor, prior to the execution of this Contract, any and all written and tangible material in its possession concerning conditions below ground at the site of the Project. Such written and tangible material is furnished to the Contractor only in order to make complete disclosure of such material and for no other purpose. By furnishing such material, the Owner does not represent, warrant, or guarantee its accuracy either in whole, in part, implicitly or explicitly, or at all, and shall have no liability therefor. The Owner shall also furnish surveys, legal limitations and utility locations (if known), and a legal description of the Project site.

6.1.2 Excluding permits and fees normally the responsibility of the Contractor, the Owner shall obtain all approvals, easements, and the like required for construction and shall pay for necessary assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

6.1.3 The Owner shall furnish the Contractor, free of charge, 5 copies of the Contract Documents for execution of the Work. The Contractor will be charged, and shall pay the Owner, \$50.00 per additional set of Contract Documents which it may require.

#### **6.2 Right to Stop Work**

6.2.1 If the Contractor persistently fails or refuses to perform the Work in accordance with this Contract, the Owner may order the Contractor to stop the Work, or any described portion thereof, until the cause for stoppage has been corrected no longer exists, or the Owner orders that Work be resumed. In such event, the Contractor shall immediately obey such order.

### **6.3 Owner's Right to Perform Work**

6.3.1 If the Contractor's Work is stopped by the Owner under Paragraph 6.2, and the Contractor fails within seven (7) days of such stoppage to provide adequate assurance to the Owner that the cause of such stoppage will be eliminated or corrected, then the Owner may, without prejudice to any other rights or remedies the Owner may have against the Contractor, proceed to carry out the subject Work. In such a situation, an appropriate Change Order shall be issued deducting from the Contract Price the cost of correcting the subject deficiencies, plus compensation for the Architect's additional services and expenses necessitated thereby, if any. If the unpaid portion of the Contract Price is insufficient to cover the amount due the Owner, the Contractor shall pay the difference to the Owner.

## **ARTICLE VII**

### **THE CONTRACTOR**

7.1 The Contractor is again reminded of its continuing duty set forth in Subparagraph 1.5.7. The Contractor shall perform no part of the Work at any time without adequate Contract Documents or, as appropriate, approved Shop Drawings, Product Data or Samples for such portion of the Work. If the Contractor performs any of the Work knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Architect, the Contractor shall bear responsibility for such performance and shall bear the cost of correction.

7.2 The Contractor shall perform the Work strictly in accordance with this Contract.

7.3 The Contractor shall supervise and direct the Work using the Contractor's best skill, effort and attention. The Contractor shall be responsible to the Owner for any and all acts or omissions of the Contractor, its employees and others engaged in the Work on behalf of the Contractor.

### **7.4 Warranty**

7.4.1 The Contractor warrants to the Owner that all labor furnished to progress the Work under this Contract will be competent to perform the tasks undertaken, that the product of such labor will yield only first-class results, that materials and equipment furnished will be of good quality and new unless otherwise permitted by this Contract, and that the Work will be of good quality, free from faults and defects and in strict conformance with this Contract. All Work not conforming to these requirements

may be considered defective.

**7.5** The Contractor shall obtain and pay for all permits, inspections, fees and licenses necessary and ordinary for the Work. The Contractor shall comply with all lawful requirements applicable to the Work and shall give and maintain any and all notices required by applicable law, ordinance, or regulation pertaining to the Work.

**7.6 Supervision**

7.6.1 The Contractor shall employ and maintain at the Project site only competent supervisory personnel. Absent written instruction from the Contractor to the contrary, the superintendent shall be deemed the Contractor's authorized representative at the site and shall be authorized to receive and accept any and all communications from the Owner or the Architect.

7.6.2 Key supervisory personnel assigned by the Contractor to this Project are as follows:

<u>Name</u>	<b>Function</b>
_____	_____
_____	_____
_____	_____
_____	_____

So long as the individuals named above remain actively employed or retained by the Contractor, they shall perform the functions indicated next to their names unless the Owner agrees to the contrary in writing. In the event one or more individuals not listed above subsequently assumes one or more of those functions listed above, the Contractor shall be bound by the provisions of this Subparagraph 7.6.2 as though such individuals had been listed above.

**7.7 Schedules**

7.7.1 The Contractor, within fifteen (15) days of commencing the Work, shall submit to the Owner and the Architect for their information, the Contractor's schedule for completing the Work. Additionally, within fifteen (15) days of commencing the Work, the Contractor shall submit to the Owner and the Architect a separate shop drawing and submittal schedule detailing the schedule for the submission to the Architect of all shop drawings, submittals, product data and other similar documents. Each of the schedules required herein shall be revised no less frequently than monthly (unless the parties otherwise agree in writing) and shall be revised to reflect conditions encountered from time-to-time and shall be related to the entire Project. Each such revision shall be furnished to the Owner and the Architect. The schedules, and all revisions, shall be in such form, and shall contain such detail, as the Owner or the Architect may require. THE PARTIES SPECIFICALLY AGREE THAT ANY FLOAT CONTAINED IN THE SCHEDULES SHALL BELONG TO THE PROJECT AND IN

NO EVENT SHALL THE CONTRACTOR MAKE CLAIM FOR ANY ALLEGED DELAY, ACCELERATION, OR EARLY COMPLETION SO LONG AS THE PROJECT IS COMPLETED WITHIN THE CONTRACT TIME. Strict compliance with the requirements of this Paragraph is a condition precedent for payment to the Contractor, and failure by the Contractor to strictly comply with said requirements shall constitute a material breach of this Contract.

7.8 The Contractor shall continuously maintain at the site, for the benefit of the Owner and the Architect, one record copy of this Contract marked to record on a current basis changes, selections and modifications made during construction. Additionally, the Contractor shall maintain at the site for the Owner and Architect the approved Shop Drawings, Product Data, Samples and other similar required submittals. Upon final completion of the Work, all of these record documents shall be delivered to the Owner.

#### **7.9 Shop Drawings, Product Data and Samples**

7.9.1 Shop Drawings, Product Data, Samples and other submittals from the Contractor do not constitute Contract Documents. Their purpose is merely to demonstrate the manner in which the Contractor intends to implement the Work in conformance with information received from the Contract Documents.

7.9.2 The Contractor shall not perform any portion of the Work requiring submittal and review of Shop Drawings, Product Data or Samples unless and until such submittal shall have been approved by the Architect. Approval by the Architect, however, shall not be evidence that Work installed pursuant thereto conforms with the requirements of this Contract.

#### **7.10 Cleaning the Site and the Project**

7.10.1 The Contractor shall keep the site reasonably clean during performance of the Work. Upon final completion of the Work, the Contractor shall clean the site and the Project and remove all waste, together with all of the Contractor's property therefrom.

#### **7.11 Access to Work**

7.11.1 The Owner and the Architect shall have access to the Work at all times from commencement of the Work through final completion. The Contractor shall take whatever steps necessary to provide access when requested.

#### **7.12 Indemnity**

7.12.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner and its agents from and against liability, claims, damages, losses and expenses, including attorneys' fees, arising out of or resulting from performance of the Work, provided that such liability, claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use

resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such liability, claim, damage, loss or expense is caused in part by a party indemnified hereunder.

7.12.2 In claims against any person or entity indemnified under this Paragraph 7.12 by an employee of the Contractor, a Subcontractor, any one directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 7.12 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

### **7.13 Means, Methods, Techniques, Sequences, Procedures and Safety**

7.13.1 The Contractor is fully responsible for, and shall have control over, all construction means, methods, techniques, sequences, procedures and safety, and shall coordinate all portions of the work required by the Contract Documents. Nothing contained herein, however, shall in any manner whatsoever relieve, release or discharge the Architect from any of its duties, responsibilities, obligations, or liabilities as set forth in its contract with the Owner, or as provided by law.

### **7.14 Separate Contracts**

7.14.1 The Owner reserves the right to perform work on the premises with its own forces or by the use of other contractors. In such event, the Contractor shall fully cooperate with the Owner and such other contractors and shall coordinate, schedule and manage its work so as not to hinder, delay or otherwise interfere with the separate work of the Owner or other contractors.

7.14.2 The Contractor acknowledges that site work for the Project, including but not limited to, clearing and grubbing, rough grading, finish grading, building pad preparation, curbing, gutter installation, and paving will be performed by the Owner or a separate contractor under contract with the Owner ("the Site Contractor"). The Contractor further acknowledges that said site work may proceed simultaneously with the Work of the Contractor. With respect to said site work and the Site Contractor, the Contractor agrees as follows:

- (a) The Contractor shall coordinate and cooperate fully with the Site Contractor so as to cause no interference with, or delay to, the work of the Site Contractor. This duty includes, but is not limited to, the duty to share and coordinate construction schedules, delivery schedules, and any and all other information necessary for the proper and timely performance of the Work or the site work. The Contractor agrees to meet with the Owner, the Architect, or the Site Contractor as may be necessary to avoid and resolve any issues, questions, or problems concerning this duty of coordination and cooperation. Communications by and between the Contractor and the Site Contractor shall be initially in writing, or confirmed in writing within twenty-four (24) hours of same, and a copy of all such communications shall be immediately

furnished to the Owner and the Architect;

- (b) In the event the Contractor contends or asserts that it has suffered or sustained any delay, interference, liability, damage, cost or expense arising out of, or resulting from, any act or omission of the Site Contractor, the Contractor shall provide written notice of same to the Owner, Architect, and Site Contractor within twenty-four (24) hours of the act or omission giving rise to such delay, interference, liability, damage, cost or expense. Such notice shall include a description of each act or omission in issue as well as a detailed statement of any actual or anticipated liability, damage, cost or expense arising therefrom. The Contractor shall further provide such supporting documentation relating to the matters set forth in such notice as the Owner may require;

(c) THE CONTRACTOR HEREIN ACKNOWLEDGES AND AGREES THAT IT SHALL MAKE NO CLAIM FOR DAMAGES, COST OR EXPENSE OF ANY KIND OR NATURE AGAINST THE OWNER ARISING OUT OF, OR RESULTING FROM, PERFORMANCE OF ANY OF THE SITE WORK BY THE SITE CONTRACTOR OR ANY ACT OR OMISSION OF THE SITE CONTRACTOR, AND ANY SUCH CLAIM IS HEREIN EXPRESSLY AND UNCONDITIONALLY WAIVED. THE SOLE AND EXCLUSIVE REMEDY OF THE CONTRACTOR IN THE EVENT OF ANY DELAY, INTERFERENCE, OR OTHER WRONGFUL ACT OR OMISSION OF THE SITE CONTRACTOR SHALL BE AN EXTENSION OF THE CONTRACT TIME PROVIDED, HOWEVER, THAT THE NOTICE REQUIRED BY SUBPARAGRAPH (b) HEREIN ABOVE IS A CONDITION PRECEDENT TO ANY SUCH EXTENSION OF TIME AND FURTHER PROVIDED THAT THE CONTRACTOR MUST DEMONSTRATE TO THE OWNER THAT THE DELAY, INTERFERENCE OR OTHER WRONGFUL ACT OR OMISSION OF THE SITE CONTRACTOR DID IN FACT DELAY THE PROJECT TO THE EXTENT OF THE TIME REQUESTED BY THE CONTRACTOR. Should any other provision in the Contract Documents conflict with any of the terms and conditions of this subparagraph, the terms and conditions of this subparagraph shall control;

- (d) Upon completion of the site work, or any portion of same as designated by the Owner or the Architect, the Contractor shall meet with the Owner or the Architect and inspect such site work to determine whether or not it has been installed in accordance with the requirements of the Contract Documents. Upon completion of such inspection, the Contractor shall notify the Owner and the Architect in writing of any and all deviations or variances from the requirements of the site work contract or the Contract Documents. Except as to the extent set forth in such notice, the Contractor shall be deemed to have accepted the site work, or designated portion of same, and such acceptance shall be deemed an acknowledgment by the Contractor that such work has been installed in full conformity with all requirements of the site work contract and the Contract Documents and that it is suitable, ready and fit to receive the Work of the Contractor. Said acceptance shall further constitute an

acknowledgment and agreement by the Contractor that it will take and assume full responsibility for any subsequent damage to said site work caused by the Contractor, any of its subcontractors, suppliers, or others on the Project for the benefit of the Contractor.

## ARTICLE VIII

### CONTRACT ADMINISTRATION

#### **8.1 The Architect**

8.1.1 The Landscape Architect for this project is John Bricken and Dale Brasher

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In the event the Owner should find it necessary or convenient to replace the Architect, the Owner shall retain a replacement Architect and the status of the replacement Architect shall be that of the former Architect.

#### **8.2 Architect's Administration**

8.2.1 The Architect, unless otherwise directed by the Owner in writing, will perform those duties and discharge those responsibilities allocated to the Architect as set forth in this Contract. The Architect shall be the Owner's representative from the effective date of this Contract until final payment has been made. The Architect shall be authorized to act on behalf of the Owner only to the extent provided in this Contract.

8.2.2 The Owner and the Contractor shall communicate with each other in the first instance through the Architect.

8.2.3 The Architect shall be the initial interpreter of the requirements of the drawings and specifications and the judge of the performance thereunder by the Contractor. The Architect shall render written or graphic interpretations necessary for the proper execution or progress of the Work with reasonable promptness on request of the Contractor.

8.2.4 The Architect will review the Contractor's Applications for Payment and will certify to the Owner for payment to the Contractor, those amounts then due the Contractor as provided in this Contract.

8.2.5 The Architect shall have authority to reject Work which is defective or does not conform to the requirements of this Contract. If the Architect deems it necessary or advisable, the Architect shall have authority to require additional inspection or testing of the Work for compliance with Contract requirements.

8.2.6 The Architect will review and approve, or take other appropriate action as necessary, concerning the Contractor's submittals including Shop Drawings, Product Data and Samples. Such review, approval or other action shall be for the sole purpose of determining conformance with the design concept and information given through the Contract Documents.

8.2.7 The Architect will prepare Change Orders and may authorize minor changes in the Work by Field Order as provided elsewhere herein.

8.2.8 The Architect shall, upon written request from the Contractor, conduct inspections to determine the date of Substantial Completion and the date of Final Completion, will receive and forward to the Owner for the Owner's review and records, written warranties and related documents required by this Contract and will issue a final Certificate for Payment upon compliance with the requirements of this Contract.

8.2.9 The Architect's decisions in matters relating to aesthetic effect shall be final if consistent with the intent of this Contract.

8.2.10 THE DUTIES, OBLIGATIONS AND RESPONSIBILITIES OF THE CONTRACTOR UNDER THIS AGREEMENT SHALL IN NO MANNER WHATSOEVER BE CHANGED, ALTERED, DISCHARGED, RELEASED, OR SATISFIED BY ANY DUTY, OBLIGATION OR RESPONSIBILITY OF THE ARCHITECT. THE CONTRACTOR IS NOT A THIRD-PARTY BENEFICIARY OF ANY AGREEMENT BY AND BETWEEN THE OWNER AND THE ARCHITECT. IT IS EXPRESSLY ACKNOWLEDGED AND AGREED THAT THE DUTIES OF THE CONTRACTOR TO THE OWNER ARE INDEPENDENT OF, AND ARE NOT DIMINISHED BY, ANY DUTIES OF THE ARCHITECT TO THE OWNER.

### 8.3 **Claims by the Contractor**

8.3.1 All Contractor claims shall be initiated by written notice and claim to the Owner and the Architect. Such written notice and claim must be furnished within seven (7) days after occurrence of the event, or the first appearance of the condition, giving rise to the claim.

8.3.2 Pending final resolution of any claim of the Contractor, the Contractor shall diligently proceed with performance of this Contract and the Owner shall continue to make payments to the Contractor in accordance with this Contract. The resolution of any claim under this Paragraph 8.3 shall be reflected by a Change Order executed by the Owner, the Architect and the Contractor.

8.3.3 **Claims for Concealed and Unknown Conditions** -- Should concealed and unknown conditions encountered in the performance of the Work (a) below the surface of the ground or (b) in an existing structure be at variance with the conditions indicated by this Contract, or should unknown conditions of an unusual nature differing materially from those ordinarily encountered in the area and generally recognized as inherent in Work of the character provided for in this Contract, be encountered, the Contract Price shall be equitably adjusted by Change Order upon the written notice and claim by either party made within seven (7) days after the first observance of the

condition. As a condition precedent to the Owner having any liability to the Contractor for concealed or unknown conditions, the Contractor must give the Owner and the Architect written notice of, and an opportunity to observe, the condition prior to disturbing it. The failure by the Contractor to make the written notice and claim as provided in this Subparagraph shall constitute a waiver by the Contractor of any claim arising out of or relating to such concealed or unknown condition.

**8.3.4 Claims for Additional Costs** – If the Contractor wishes to make a claim for an increase in the Contract Price, as a condition precedent to any liability of the Owner therefor, the Contractor shall give the Architect written notice of such claim within seven (7) days after the occurrence of the event, or the first appearance of the condition, giving rise to such claim. Such notice shall be given by the Contractor before proceeding to execute any additional or changed Work. The failure by the Contractor to give such notice and to give such notice prior to executing the Work shall constitute a waiver of any claim for additional compensation.

8.3.4.1 In connection with any claim by the Contractor against the Owner for completion in excess of the Contract Price, any liability of the Owner shall be strictly limited to direct costs incurred by the Contractor and shall in no event include indirect costs or consequential damages of the Contractor. The Owner shall not be liable to the Contractor for claims of third parties, including Subcontractors, unless and until liability of the Contractor has been established therefor in a court of competent jurisdiction.

**8.3.5 Claims for Additional Time** -- If the Contractor is delayed in progressing any task which at the time of the delay is then critical or which during the delay becomes critical, as the sole result of any act or neglect to act by the Owner or someone acting in the Owner's behalf, or by changes ordered in the Work, unusual delay in transportation, unusually adverse weather conditions not reasonably anticipatable, fire or any causes beyond the Contractor's control, then the date for achieving Substantial Completion of the Work shall be extended upon the written notice and claim of the Contractor to the Owner and the Architect, for such reasonable time as the Architect may determine. Any notice and claim for an extension of time by the Contractor shall be made not more than seven (7) days after the occurrence of the event or the first appearance of the condition giving rise to the claim and shall set forth in detail the Contractor's basis for requiring additional time in which to complete the Project. In the event the delay to the Contractor is a continuing one, only one notice and claim for additional time shall be necessary. If the Contractor fails to make such claim as required in this Subparagraph, any claim for an extension of time shall be waived.

**8.3.6 Extension of Contract Time for Unusually Adverse Weather Conditions not Reasonably Anticipated**

8.3.6.1 Pursuant to the provisions of subparagraph 8.3.5 of the Contract for Construction and Incorporated General Conditions, the contract time may be extended upon written notice and claim of the Contractor to the Owner and the Architect as set forth in such subparagraph and as further set forth herein. It is, however, expressly agreed that the time for completion as stated in the Contract Documents includes due allowance for calendar days on which work cannot be performed out-of-

doors. For purposes of this Contract, and for purposes of extensions of contract time, the Contractor agrees that he anticipates adverse weather sufficient to prevent work in accordance with the schedule set forth hereinbelow, and the Contractor further agrees that unless he encounters actual adverse weather in excess of those days set forth hereinbelow, he shall not make, nor shall he be entitled to, any extension of the contract time:

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(Insert Schedule)

Furthermore, in addition to the notice requirements set forth in the aforesaid subparagraph 8.3.5, the Contractor agrees that it shall provide written notice to the Owner and the Architect on the day of any adverse weather not anticipated and for which a request for a time extension has been, or will be, made. Said notice shall state with particularity a description of the adverse weather as well as a description of the nature and extent of any delay caused by such weather. Receipt of this notice by the Owner and the Architect is a condition precedent to the submission of any claim for an extension of time as provided by subparagraph 8.3.5. Furthermore, as required by subparagraph 8.3.5, the Contractor shall submit a written claim for extension of time within seven (7) days after the occurrence of the adverse weather and such claim shall be supported by such documentation including, but not limited to, official weather reports, as the Owner or the Architect may require. To the extent that any of the terms and conditions set forth in this paragraph are in conflict with any of the terms and conditions of subparagraph 8.3.5 as identified herein, the terms and conditions of this paragraph shall govern and control.

**ARTICLEIX**  
**SUBCONTRACTORS**

**9.1 Definition**

9.1.1 A Subcontractor is an entity which has a direct contract with the Contractor to perform a portion of the Work.

**9.2 Award of Subcontracts**

9.2.1 Upon execution of the Contract, the Contractor shall furnish the Owner, in writing, the names of persons or entities proposed by the Contractor to act as a Subcontractor on the Project. The Owner shall promptly reply to the Contractor, in writing, stating any objections the Owner may have to such proposed Subcontractor. The Contractor shall not enter into a Subcontract with a proposed Subcontractor with reference to whom the Owner has made timely objection. The Contractor shall not be required to Subcontract with any party to whom the Contractor has objection.

9.2.2 All subcontracts shall afford the Contractor rights against the Subcontractor which correspond to those rights afforded to the Owner against the Contractor herein, including those rights afforded to the Owner by Subparagraph 12.2.1 below.

**ARTICLE X**  
**CHANGES IN THE WORK**

**10.1 Changes Permitted**

10.1.1 Changes in the Work within the general scope of this Contract, consisting of additions, deletions, revisions, or any combination thereof, may be ordered without invalidating this Contract, by Change Order or by Field Order.

10.1.2 Changes in the Work shall be performed under applicable provisions of this Contract and the Contractor shall proceed promptly with such changes.

**10.2 Change Order Defined**

10.2.1 Change Order shall mean a written order to the Contractor executed by the Owner and the Architect, issued after execution of this Contract, authorizing and directing a change in the Work or an adjustment in the Contract Price or the Contract Time, or any combination thereof. The Contract Price and the Contract Time may be changed only by Change Order.

**10.3 Changes in the Contract Price**

10.3.1 Any change in the Contract Price resulting from a Change Order shall be determined as follows: (a) by mutual agreement between the Owner and the Contractor as evidenced by (1) the change in the Contract Price being set forth in the Change Order, (2) such change in the Contract Price, together with any conditions or requirements related thereto, being initialed by both parties and (3) the Contractor's execution of the Change Order, or (b) if no mutual agreement occurs between the Owner and the Contractor, then, as provided in Subparagraph 10.3.2 below.

10.3.2 If no mutual agreement occurs between the Owner and the Contractor as contemplated in Subparagraph 10.3.1 above, the change in the Contract Price, if any, shall then be determined by the Architect on the basis of the reasonable expenditures or savings of those performing, deleting or revising the Work attributable to the change, including, in the case of an increase or decrease in the Contract Price, a reasonable allowance for direct job site overhead and profit. In such case, the Contractor shall present, in such form and with such content as the Owner or the Architect requires, an itemized accounting of such expenditures or savings, plus appropriate supporting data for inclusion in a Change Order. Reasonable expenditures or savings shall be limited to the following: reasonable costs of materials, supplies, or equipment including delivery costs, reasonable costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance, reasonable rental costs of machinery and equipment exclusive of hand tools whether rented from the Contractor or others, reasonable costs of premiums for all bonds and insurance, permit fees, and sales, use or other taxes related to the Work, and reasonable cost of direct supervision and jobsite field office overhead directly

attributable to the change. In the event the Contractor performs the Work required by change order with its own forces, and not the forces of a subcontractor, the overhead and profit due the Contractor for such work shall be twenty (20) percent. In the event the change order Work is performed by one or more subcontractors, the Contractor's overhead and profit shall be seven and one-half (7-1/2) percent. In no event shall any expenditure or savings associated with the Contractor's home office or other non-jobsite overhead expense be included in any change in the Contract Price. Pending final determination of reasonable expenditures or savings to the Owner, payments on account shall be made to the Contractor on the Architect's Certificate for Payment.

10.3.3 If unit prices are provided in the Contract, and if the quantities contemplated are so changed in a proposed Change Order that application of such unit prices to the quantities of Work proposed will cause substantial inequity to the Owner or to the Contractor, the applicable unit prices shall be equitably adjusted.

#### **10.4 Effect of Executed Change Order**

10.4.1 The execution of a Change Order by the Contractor shall constitute conclusive evidence of the Contractor's agreement to the ordered changes in the Work, this Contract as thus amended, the Contract Price and the Contract Time. The Contractor, by executing the Change Order, waives and forever releases any claim against the Owner for additional time or compensation for matters relating to or arising out of or resulting from the Work included within or affected by the executed Change Order.

#### **10.5 Notice to Surety; Consent**

10.5.1 The Contractor shall notify and obtain the consent and approval of the Contractor's surety with reference to all Change Orders if such notice, consent or approval are required by the Contractor's surety or by law. The Contractor's execution of the Change Order shall constitute the Contractor's warranty to the Owner that the surety has been notified of and consents to, such Change Order and the surety shall be conclusively deemed to have been notified of such Change Order and to have expressly consented thereto.

### **ARTICLE XI**

#### **UNCOVERING AND CORRECTING WORK**

##### **11.1 Uncovering Work**

11.1.1 If any of the Work is covered contrary to the Architect's request or to any provisions of this Contract, it shall, if required by the Architect or the Owner, be uncovered for the Architect's inspection and shall be properly replaced at the Contractor's expense without change in the Contract Time.

11.1.2 If any of the Work is covered in a manner not inconsistent with Subparagraph 11.1.1 above, it shall, if required by the Architect or Owner, be uncovered for the Architect's inspection. If such Work conforms strictly with this Contract, costs of uncovering and proper replacement shall by Change Order be charged to the Owner. If such Work does not strictly conform with this Contract, the Contractor shall pay the costs of uncovering and proper replacement.

## **11.2 Correcting Work**

11.2.1 The Contractor shall immediately proceed to correct Work rejected by the Architect as defective or failing to conform to this Contract. The Contractor shall pay all costs and expenses associated with correcting such rejected Work, including any additional testing and inspections, and reimbursement to the Owner for the Architect's services and expenses made necessary thereby.

11.2.2 If within one (1) year after Substantial Completion of the Work any of the Work is found to be defective or not in accordance with this Contract, the Contractor shall correct it promptly upon receipt of written notice from the Owner. This obligation shall survive final payment by the Owner and termination of this Contract. With respect to Work first performed and completed after Substantial Completion, this one year obligation to specifically correct defective and nonconforming Work shall be extended by the period of time which elapses between Substantial completion and completion of the subject Work.

11.2.3 Nothing contained in this Paragraph 11.2 shall establish any period of limitation with respect to other obligations which the Contractor has under this Contract. Establishment of the one-year time period in Subparagraph 11.2.2 relates only to the duty of the Contractor to specifically correct the Work.

## **11.3 Owner May Accept Defective or Nonconforming Work**

11.3.1 If the Owner chooses to accept defective or nonconforming Work, the Owner may do so. In such event, the Contract Price shall be reduced by the greater of (a) the reasonable cost of removing and correcting the defective or nonconforming Work, and (b) the difference between the fair market value of the Project as constructed and the fair market value of the Project had it not been constructed in such a manner as to include defective or nonconforming Work. If the remaining portion of the unpaid Contract Price, if any, is insufficient to compensate the Owner for its acceptance of defective or nonconforming Work, the Contractor shall, upon written demand from the Owner, pay the Owner such remaining compensation for accepting defective or nonconforming Work.

## ARTICLE XII

### CONTRACT TERMINATION

#### **12.1 Termination by the Contractor**

12.1.1 If the Work is stopped for a period of ninety (90) days by an order of any court or other public authority, or as a result of an act of the Government, through no fault of the Contractor or any person or entity working directly or indirectly for the Contractor, the Contractor may, upon ten (10) days' written notice to the Owner and the Architect, terminate performance under this Contract and recover from the Owner payment for the actual reasonable expenditures of the Contractor (as limited in Subparagraph 10.3.2 above) for all Work executed and for materials, equipment, tools, construction equipment and machinery actually purchased or rented solely for the Work, less any salvage value of any such items.

12.1.2 If the Owner shall persistently or repeatedly fail to perform any material obligation to the Contractor for a period of fifteen (15) days after receiving written notice from the Contractor of its intent to terminate hereunder, the Contractor may terminate performance under this Contract by written notice to the Architect and the Owner. In such event, the Contractor shall be entitled to recover from the Owner as though the Owner had terminated the Contractor's performance under this Contract for convenience pursuant to Subparagraph 12.2.1 hereunder.

#### **12.2 Termination by the Owner**

##### **12.2.1 For Convenience**

12.2.1.1 The Owner may for any reason whatsoever terminate performance under this Contract by the Contractor for convenience. The Owner shall give written notice of such termination to the Contractor specifying when termination becomes effective.

12.2.1.2 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 the termination of subcontracts and orders. The Owner may direct the Contractor to assign the Contractor's right, title and interest under terminated orders or subcontracts to the Owner or its designee.

12.2.1.3 The Contractor shall transfer title and deliver to the Owner such completed or partially completed Work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has.

#### 12.2.1.4

- (a) The Contractor shall submit a termination claim to the Owner and the Architect specifying the amounts due because of the termination for convenience together with costs, pricing or other data required by the Architect. If the Contractor fails to file a termination claim within one (1) year from the effective date of termination, the Owner shall pay the Contractor, an amount derived in accordance with sub-paragraph (c) below.
- (b) The Owner and the Contractor may agree to the compensation, if any, due to the Contractor hereunder.
- (c) Absent agreement to the amount due to the Contractor, the Owner shall pay the Contractor the following amounts:
  - (i) Contract prices for labor, materials, equipment and other services accepted under this Contract;
  - (ii) 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 have not 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;
  - (iii) Reasonable costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to Subparagraph 12.2.1.2 of this Paragraph. These costs shall not include amounts paid in accordance with other provisions hereof.

The total sum to be paid the Contractor under this Subparagraph 12.2.1 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.

#### 12.2.2 For Cause

12.2.2.1 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 materials, 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 to receive any further payment until the Work is finished.

12.2.2.2 If the unpaid balance of the Contract Price exceeds the cost of finishing the work, including compensation for the Architect's additional 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 Owner. This obligation for payment shall survive the termination of the Contract.

12.2.2.3 In the event the employment of the Contractor is terminated by the Owner for cause pursuant to Subparagraph 12.2.2 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 under Subparagraph 12.2.1 and the provisions of Subparagraph 12.2.1 shall apply.

### **ARTICLE XIII**

#### **OWNER'S RIGHT TO SUSPEND CONTRACTOR'S PERFORMANCE**

**13.1** The Owner shall have the right at any time to direct the Contractor to suspend its performance, or any designated part thereof, for any reason whatsoever, or without reason, for a cumulative period of up to sixty (60) calendar days. If any such suspension is directed by the Owner, the Contractor shall immediately comply with same.

**13.2** In the event the Owner directs a suspension of performance under this Paragraph 13, through no fault of the Contractor, the Owner shall pay the Contractor as full compensation for such suspension the Contractor's reasonable costs, actually incurred and paid, of:

- (i) demobilization and remobilization, including such costs paid to subcontractors;
- (ii) preserving and protecting work in place;
- (iii) storage of materials or equipment purchased for the Project, including insurance thereon;
- (iv) performing in a later, or during a longer, time frame than that contemplated by this Contract.

**ARTICLE**

**XIV**

**INSURANCE**

(Here insert applicable insurance requirements.)

**ARTICLE XV**

**MISCELLANEOUS**

**15.1 Governing Law**

15.1.1 The Contract shall be governed by the law of the State of Georgia.

**15.2 Successors and Assigns**

15.2.1 The Owner and Contractor bind themselves, their successors, assigns and legal representatives to the other party hereto and to successors, assigns and legal representatives 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.

**15.3 Surety Bonds**

15.3.1 The Contractor shall furnish separate performance and payment bonds to the Owner. 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 form suitable to the Owner and shall be executed by a surety, or sureties, reasonably suitable to the Owner.

**[OWNER]**

**[CONTRACTOR]**

\_\_\_\_\_  
(Typed Name) (SEAL)

\_\_\_\_\_  
(Typed Name) (SEAL)

By: \_\_\_\_\_  
(Signature)

By: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Printed Name, Title and Address)

\_\_\_\_\_  
(Printed Name, Title and Address)

\_\_\_\_\_  
(Date of Execution)

\_\_\_\_\_  
(Date of Execution)

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# **SECTION 02200 SITE PREPARATION**

## **PART 1 GENERAL**

### **1.01 SCOPE**

This Section describes materials and equipment to be utilized and requirements for their use in preparing the work site for construction. The Contractor shall furnish all materials, equipment and labor necessary to complete the work. The contractor is required to contact the **Utilities Protection Center, Inc. (Know what's below. Call before you dig. Dial 811)** prior to any excavation or construction.



### **1.02 REFERENCES**

Georgia Manual for Erosion and Sedimentation Control, latest edition.

### **1.03 QUALITY ASSURANCE**

- A. Comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction.
- B. Layout work shall be done under supervision of a Civil Engineer or Registered Land Surveyor, registered in Georgia.
- C. Transit and measuring devices shall be calibrated to layout site and construction work.

### **1.04 SITE CONDITIONS**

The area to be cleared and grubbed is shown schematically on the Drawings or specified below.

## **PART 2 PRODUCTS**

### **2.01 EQUIPMENT**

The Contractor shall furnish equipment of the type normally used in clearing and grubbing operations including, but not limited to, tractors, dozers, chippers, trucks, loaders, and root rakes.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Protect and maintain all benchmarks, monuments and reference points. Replace if disturbed or destroyed. If found at variance with the Drawings, notify the Engineer before proceeding with layout work.
- B. Install erosion and sedimentation control structures as shown on the Drawings.
- C. Protect all trees, vegetation, structures, utilities, and buildings not designated for removal for demolition.

### **3.02 TOPSOIL STRIPPING AND STOCKPILING**

- A. Topsoil (top 6" – 8" of material) is to be removed from all cleared and grubbed areas and placed in designated stockpile areas as shown on the plans. The Contractor shall then grade the entire work site to conform, in general, to the finish elevations shown on the Plans.
- B. Shape topsoil stockpiles to drain without ponding water.
- C. Where trees are indicated to remain, stop topsoil stripping at drip line.

### **3.03 TREE PROTECTION**

- A. Construct tree protection barricades, minimum 3'-0" high around individual trees and groups of trees designated to remain. Construct barricades at drip line.
- B. Protect tree root systems from damage due to deleterious materials caused by run-off or spillage during mixing, use or discarding of construction materials or drainage from stored materials. Protect root systems from compaction, flooding, erosion or excessive wetting.

### **3.04 EXCAVATION AROUND TREES TO REMAIN**

- A. Where trenching for utilities is required within drip line, hand dig under or around roots. Cut no lateral roots or tap roots; cut smaller roots which interfere with new construction.
- B. Where excavation for new construction is required within drip line of trees, hand excavate to minimize damage to root systems. Use narrow tine spading forks and comb soil to expose roots. Relocate roots in backfill areas. If large, main lateral roots are encountered, expose beyond excavation limits, bend and relocate without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately 3" back from new construction.

- C. Allow no exposed roots to dry out before permanent backfill is placed; provide temporary earth cover, or pack with peat moss and wrap with burlap. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with backfill.
- D. Prune branches in accord with standard horticultural practice to balance loss to root system caused by damage or cutting of root system. Engage qualified arborist approved by the Engineer to prune branches.

### **3.05 REPAIR FOR DAMAGED TREES**

- A. Engage a qualified arborist approved by the Engineer to perform tree repair work.
- B. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.
- C. Remove dead trees and damaged trees in construction area which are determined by the tree arborist to be incapable of restoration to normal growth pattern.

### **3.06 CLEARING AND GRUBBING**

- A. Clear and grub each area before excavating. All trees, herbaceous growth and stumps are to be chipped for mulch. Mulch will be stockpiled in the areas designated on the Plans or used for erosion control as required. All other debris is to be removed to an approved landfill.
- B. Materials to be removed from the project site include, but are not limited to trash, organic matter, construction waste materials (i.e. paving, concrete miscellaneous structures, houses), debris and abandoned utilities.
- C. Clearing & grubbing shall consist of completely removing trees, roots, stumps, trash and other debris from all graded areas, road areas, utility/pipeline areas, fence line areas, structure and building areas so that topsoil is free of roots and debris. Topsoil is to be left sufficiently clean so that further picking and raking will not be required.
- D. All foundations and planking embedded in the ground shall be removed and disposed. Butts of utility poles shall be removed.
- E. Landscaping features shall include, but not limited to, fences, cultivated trees and shrubbery, property corners, man made improvements and signs. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features.
- F. Surface rocks and boulders shall be grubbed from the soil and removed from the site if not suitable as rip rap.
- G. The entire construction area shall be grubbed by heavy tractors with root rakes. Raking shall generally proceed along the contour rather than up and down slopes so as to inhibit soil erosion.

- H. Where the tree limbs interfere with utility wires, or where the trees to be felled are in close proximity to utility wires, the tree shall be taken down in sections to eliminate the possibility of damage to the utility.
- I. Any work pertaining to utility poles shall comply with the requirements of the appropriate utility.
- J. All fences adjoining any excavation or embankment that, in the Contractor's opinion, may be damaged or buried, shall be carefully removed, stored and replaced. Any fencing that, in the Engineer's opinion, is significantly damaged shall be replaced with new fence material.
- K. Stumps and roots shall be grubbed and removed to a depth not less than two feet below grade. All holes or cavities which extend below the subgrade elevation of the proposed work shall be filled with crushed rock or other suitable material, compacted to the same density as the surrounding material.
- L. The Contractor shall exercise special precautions for the protection and preservation of trees, cultivated shrubs, sod, fences, etc. situated within the limits of the construction area but not directly within excavation and/or fill limits. The Contractor shall be held liable for any damage the Contractor's operations have inflicted on such property.
- M. The Contractor shall be responsible for all damages to existing improvements resulting from Contractor's operations.

### **3.07 DISPOSAL OF DEBRIS**

- A. The debris resulting from the clearing and grubbing operation shall be removed from the site and disposed of in accordance with all requirements of federal, state, county and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or in any street or alley. No debris shall be deposited upon any private property. In no case shall any material or debris be left on the Project, shoved onto abutting private properties or buried on the Project.
- B. When approved in writing by the Engineer and when authorized by the proper authorities, the Contractor may dispose of such debris by burning on the Project site provided all requirements set forth by the governing authorities are met. The authorization to burn shall not relieve the Contractor in any way from damages which result from the Contractor's operations. On easements through private property, the Contractor shall not burn on the site unless written consent is also secured from the property owner, in addition to authorization from the proper authorities.

**END OF SECTION**

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## **SECTION 02220 DEMOLITION**

### **PART 1 GENERAL**

#### **1.01 RELATED DOCUMENTS**

Construction Plans and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### **1.02 DESCRIPTION OF WORK**

- A. Extent of demolition work is indicated on the Construction Plans.
- B. Demolition includes all operations necessary for demolition of the existing structures, foundations and utilities as shown.
- C. Remove debris, rubbish and other materials resulting from demolition operations from the site. Transport and legally dispose of materials off site.

#### **1.03 SUBMITTALS**

- A. Schedule: Submit schedule indicating proposed methods and sequence of operations for demolition work to Owner's Representative for review prior to commencement of work. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection. The procedures shall provide for safe conduct of the work, careful removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services. The submittal shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operation.
- B. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
- C. Coordinate with Owner's continuing occupation of portions of existing building/site, with Owner's partial occupancy of completed new addition/site.

#### **1.04 JOB CONDITIONS**

- A. Occupancy: Owner will be continuously occupying areas of the building/site immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities which will severely impact Owner's normal operations.

- B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.
- C. Conditions existing at time of commencement of contract will be maintained by Owner insofar as practicable. However, variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.
- D. Partial Demolition and Removal: Items indicated to be removed but of salvable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.
- E. Storage or sale of removed items on site will not be permitted.
- F. Protection: Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition work.
- G. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to and from occupied portions of building/site.
- H. Erect temporary covered passageways as required by authorities having jurisdiction.
- I. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished, and adjacent facilities or work to remain.
- J. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
- K. Protect floors with suitable coverings when necessary.
- L. Construct temporary insulated solid dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks if required.
- M. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces, and installation of new construction to insure that no water leakage or damage occurs to structure or interior areas of existing building.
- N. Remove protections at completion of work.
- O. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

- P. Traffic: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
- Q. Do not close, block or otherwise obstruct streets, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- R. Explosives: Use of explosives will not be permitted unless otherwise noted.
- S. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
- T. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
- U. Environmental Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
- V. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.
- W. NESHAP Compliance: The Contractor is responsible for being aware of and complying with the National Emission Standard for Hazardous Air Pollutants (NESHAP) Section 112 of the Federal Clean Air Act regarding asbestos.

## **PART 2 PRODUCTS (Not Applicable)**

## **PART 3 EXECUTION**

### **3.01 INSPECTION**

Prior to commencement of demolition work, inspect areas in which work will be performed. Photograph existing conditions to structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Owner's Representative prior to starting work.

### **3.02 PREPARATION**

- A. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.
- B. Cease operations and notify the Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
- C. Cover and protect furniture, equipment and fixtures to remain from soiling or damage when demolition work is performed in rooms or areas from which such item have not been removed.
- D. Erect and maintain dust-proof partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.
- E. Where selective demolition occurs immediately adjacent to occupied portions of the building, construct dust-proof partitions of minimum 4" studs, 5/8" drywall (joints taped) on occupied side 1/2" fire-retardant plywood on demolition side, and fill partition cavity with sound-deadening insulation.
- F. Provide weatherproof closures for exterior openings resulting from demolition work.
- G. Locate, identify, stub off and disconnect utility services that are not indicated to remain.
- H. Provide by-pass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shut-down of service is necessary during change-over.

### **3.03 DEMOLITION**

- A. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on the Plans in accordance with demolition schedule and governing regulations.
- B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.
- C. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors or framing.

- D. All existing structures shall be completely removed where denoted on the Plans. All foundations and slabs shall be broken up and removed from the site. Sidewalks, curbs, gutters, streets and street light bases shall be completely removed. It is not anticipated that piling will be encountered under any of the structures to be removed; however, where piling are encountered they shall be removed to a point three feet below existing ground.
- E. When approved in writing by the Engineer and when authorized by the proper authorities, the Contractor may dispose of such debris by burning on the Project site provided all requirements set forth by the governing authorities are met. The authorization to burn shall not relieve the Contractor in any way from damages which result from the Contractor's operations. On easements through private property, the Contractor shall not burn on the site unless written consent is also secured from the property owner, in addition to authorization from the proper authorities.
- F. Demolish foundation walls to a depth of not less than 12" below existing ground surface. Demolish and remove below-grade wood or metal construction. Break up below-grade concrete slabs.
- G. For interior slabs on grade, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.
- H. Completely fill below-grade areas and voids resulting from demolition work. Provide fill consisting of approved earth, gravel or sand, free of trash and debris, stones over 6" diameter, roots or other organic matter.
- I. If anticipated mechanical, electrical or structural elements which conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's Representative in written, accurate detail. Pending receipt of directive from Owner's Representative rearrange selective demolition schedule as necessary to continue overall job progress without delay.

### **3.04 SALVAGE MATERIALS**

- A. Salvage Items: Where indicated on the Plans as "Salvage-Deliver to Owner", carefully remove indicated items, clean, store and turn over to Owner and obtain receipt.
- B. Historic artifacts, including cornerstones and their contents, commemorative plaques and tables, antiques, and other articles of historic significance remain the property of the Owner. Notify Owner's Representative if such items are encountered and obtain acceptance regarding method of removal and salvage for Owner.

### **3.05 DISPOSAL OF DEMOLISHED MATERIALS**

- A. Remove debris, rubbish and other materials resulting from demolition operations from the site. Transport and legally dispose of materials off site.
- B. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution.
  - 1. Burning of removed materials is not permitted on project site.

### **3.06 CLEAN-UP AND REPAIR**

- A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave interior areas broom clean.
- B. Repair demolition performed in excess of that required. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

**END OF SECTION**

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## **SECTION 02230 TOPSOIL**

### **PART 1 GENERAL**

#### **1.01 SCOPE**

- A. Topsoil for planting shall consist of a rich, friable soil conforming to the requirements and provisions set out in these Specifications, or a approved by the Engineer and obtained from locations indicated on the Drawings. Topsoil shall be placed at the locations indicated on the Drawings, set out in the Specifications or as directed by the Engineer and in conformity with the provisions and requirements set out in the Specifications.
- B. Suitable topsoil which has been stripped off of excavation and embankment areas shall be stockpiled as directed by the Engineer and later used before additional topsoil is hauled to the site. Unsuitable material shall not be included in these stockpiles and shall be wasted as directed by the Engineer.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. Topsoil planting shall be a rich, friable loam containing a large amount of humus and shall be original surface sandy loam, topsoil of good, rich, uniform quality, free from any material such as hard clods, stiff clay, hardpan, partially disintegrated stone, pebbles larger than 1/2-inch in diameter, lime, cement, bricks, ashes, cinders, slag, concrete, bitumen or its residue, boards, sticks, chips or other undesirable material harmful or unnecessary to plant growth. Topsoil shall be reasonable free from perennial weeds and shall not contain objectionable plant material, toxic amounts of either acid or alkaline elements or vegetable debris undesirable or harmful to plant life.
- B. Topsoil shall be natural topsoil without admixture of subsoil material, and shall be classified as a loam, silt loam, clay loam or a combination thereof. Topsoil shall contain not less than five percent nor more than 20 percent, by weight, of organic matter as determined by loss or ignition of oven-dried samples. The ignition test shall be performed on samples which have been thoroughly oven-dried to constant weight at a temperature of 221 degrees F.
- C. Topsoil shall be secured from areas from which topsoil has not been previously removed, either by erosion or mechanical methods. Topsoil shall not be removed to a depth in excess of the depth approved by the Engineer.

- D. The area or areas from which topsoil is secured shall possess such uniformity of soil depth, color, texture, drainage and other characteristics as to offer assurance that, when removed in commercial quantities, the product will be homogeneous in nature and will conform to the requirements of these Specifications, or as required by the Engineer.
- E. Topsoil may be secured, if approved by the Engineer, from areas which are, or have been, in cultivation within the past five years, which are producing or have produced fair or good yields of staple farm or truck crops without unusual fertilization, or topsoil may be secured from areas supplied with good normal drainage which is arable or suitable for cultivation.

## **PART 3 EXECUTION**

### **3.01 EQUIPMENT**

All equipment necessary for the proper removal, transportation, protection and maintenance of topsoil must be available, when required, in first class working condition and shall have been approved by the Engineer before construction will be permitted to begin.

### **3.02 REQUIREMENTS**

- A. Topsoil, except that stockpiled from excavation or embankment areas on the Project, shall not be stored for use but shall be excavated and placed directly into its final position.
- B. All areas from which topsoil is to be secured, shall be cleaned of all sticks, boards, stones, lime, cement, ashes, cinders, slag which will hinder or prevent growth.
- C. In securing topsoil from a designated pit, or elsewhere, should strata or seams of material occur which do not come under the requirements for topsoil, such material shall be removed from the topsoil or if required by the Engineer, the pit shall be abandoned.
- D. Before placing or depositing topsoil upon any areas, all improvements within the area shall be completed, unless otherwise approved by the Engineer.
- E. The areas or pits into which topsoil is to be placed or incorporated, shall be prepared before securing topsoil for use. The depth to which topsoil is excavated in any pit, shall be subject to the direction of and be approved by the Engineer.
- F. All stockpiled soils shall have adequate erosion control features in place to prevent the loss of any material from said stockpile area into storm sewers, ditches, swales, streams, ponds, lakes or waterways of any kind.

- G. Topsoil shall be transported in vehicles which will not lose or scatter the topsoil during transportation.
- H. Topsoil shall be placed upon or incorporated into prepared areas or pits in accordance with the provisions and requirements set out in the sections of these Specifications covering the particular type or kind of planting or seeding for which topsoil is required.
- I. Rock sloped and other rock areas which are to be seeded shall be capped with 9-inches of suitable material before topsoil is used.

### **3.03 MAINTENANCE**

The Contractor shall maintain topsoil, at Contractor's own expense, in connection with any seeding or planting, or otherwise, until final completion of the Project. Maintenance shall consist of preserving, protecting, replacing and such other work as may be necessary to keep the Project in a satisfactory condition.

### **3.04 CLEANING**

- A. Final cleaning shall consist of completely cleaning the area of all equipment, rubbish, excess material and unused materials which will mar the appearance of the Project and disposing of the same satisfactorily.
- B. All pavements and structures shall be swept clean of all dirt or rubbish which may have become deposited upon them during construction.
- C. In addition, final cleaning up shall be performed in accordance with the requirements of these Specifications.

**END OF SECTION**

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## **SECTION 02300 EARTHWORK**

### **PART 1 GENERAL**

#### **1.01 SCOPE**

- A. This Section includes earthwork and related operations, including, but not limited to dewatering, excavating all classes of material encountered, pumping, draining and handling of water encountered in the excavations, handling, storage, transportation and disposal of all excavated and unsuitable material, construction of fills and embankments, backfilling around structures, compacting, all sheeting, shoring and bracing, preparation of subgrades, surfacing and grading, and any other similar, incidental, or appurtenant earthwork operations which may be necessary to properly complete the work.
- B. The Contractor shall provide all services, labor, materials, and equipment required for all earthwork and related operations, necessary or convenient to the Contractor, for furnishing complete work as shown on the Drawings or specified in these Contract Documents.

#### **1.02 RELATED SECTIONS**

- A. Site Preparation: Section 02200
- B. Erosion and Sedimentation Control: Section 02370

#### **1.03 GENERAL**

- A. The elevations shown on the Drawings as existing are taken from the best existing data and are intended to give reasonably accurate information about the existing elevations. They are not precise and the Contractor shall become satisfied as to the exact quantities of excavation and fill required.
- B. Earthwork operations shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards.
- C. All excavated and filled areas for structures, trenches, fills, topsoil areas, embankments, and channels shall be maintained by the Contractor in good condition at all times until final acceptance by the Owner. All damage caused by erosion or other construction operations shall be repaired by the Contractor using material of the same type as the damaged material.

- D. The Contractor shall control grading in a manner to prevent surface water from running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby storm water can be uninterrupted in existing gutters, other surface drains, or temporary drains. Free access must be provided to all fire hydrants and meters.
- E. Tests for compaction and density shall be conducted by the Engineer or by an independent testing laboratory selected in accordance with Section 01450 of these Specifications.
1. The soils testing laboratory is responsible for the following:
    - a. Field compaction testing shall be based on using the maximum dry density determined by the Standard Proctor Compaction Test in accordance with ASTM D 698.
    - b. Determination of in-place backfill density shall be done in accordance with ASTM D 1556, "Density and unit weight of Soil In Place by the Sand-Cone Method", ASTM D 2937, "Density of Soil In Place by the Drive-Cylinder Method" or ASTM D 2922, "Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth)".
    - c. Field density tests for each lift; one test for each 5,000 square feet of fill or minimum one test per lift.
    - d. Inspecting and testing stripped site, subgrades and proposed fill materials.
  2. Contractor's duties relative to testing include:
    - a. Notifying laboratory of conditions requiring testing.
    - b. Coordinating with laboratory for field testing.
    - c. Providing representative fill soil samples to the laboratory for test purposes. Provide 50 pound samples of each fill soil.
  3. Inspection
    - a. Earthwork operations, suitability of excavated materials for fill and backfill, and placing and compaction of fill and backfill is subject to inspection. Engineer will observe earthwork operations.
    - b. Foundations and shallow spread footing foundations are required to be inspected by an engineer to verify suitable bearing and construction.
- F. All earthwork operations shall comply with the requirements of OSHA Construction Standards, Part 1926, Subpart P, Excavations, Trenching, and Shoring, and Subpart O, Motor Vehicles, Mechanized Equipment, and Marine Operations, and shall be conducted in a manner acceptable to the Engineer.
- G. It is understood and agreed that the Contractor has made a thorough investigation of the surface and subsurface conditions of the site and any special construction problems which might arise as a result of nearby watercourses and floodplains. The Contractor shall be responsible for providing all services, labor, equipment, and materials necessary or convenient to the Contractor for completing the work within the time specified in these Contract Documents.
- H. Safety

Perform all trench excavation and backfilling activities in accordance with the Occupational Safety and Health Act of 1970 (PL 91-596), as amended. The Contractor shall pay particular attention to the Safety and Health Regulations Part 1926, Subpart P “Excavation, Trenching & Shoring” as described in OSHA publication 2226.

## PART 2 PRODUCTS

### 2.01 SOILS CLASSIFICATIONS

Bedding materials listed here include a number of processed materials plus the soil types defined according to the Unified Soil Classification System (USCS) in ASTM D 2487, Standard Method for Classification of Soils for Engineering Purposes. (See below for description of soil classification). These materials are grouped into five broad categories according to their suitability for this application:

- A. Class I - Angular, 1/4 to 1 1/2 inches (6 to 40 mm) graded stone, including such as coral, slag, cinders, crushed shells and crushed stone. Note - The size range and resulting high voids ratio of Class I material make it suitable for use to dewater trenches during pipe installation. This permeable characteristic dictates that its use be limited to locations where pipe support will not be lost by migration of other embedment materials into the Class I material. When such migration is possible, the material's minimum size range should be reduced to finer than 1/4 inch (6 mm) and the gradation properly designed to limit the size of the voids.
- B. Class II - Coarse sands and gravels with maximum particle size of 1 1/2 inch (40 mm), including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil Types GW, GP, SW and SP are included in this class. Note - Sands and gravels which are clean or borderline between clean and with fines should be included. Coarse-grained soils with less than 12% but more than 5% fines are neglected in ASTM D2487 and the USCS and should be included. The gradation of Class II material influences its density and pipe support strength when loosely placed. The gradation of Class II material influences its density and pipe support strength when loosely placed. The gradation of Class II material may be critical to the pipe support and stability of the foundation and embedment if the material is imported and is not native to the trench excavation. A gradation other than well graded, such as uniformly graded or gap graded, may permit loss of support by migration into void spaces of a finer grained natural material from the trench wall and foundation.
- C. Class III - Fine sand and clayey (clay filled) gravels, including fine sands, sand-clay mixtures and gravel-clay mixtures. Soil Types SM, GC, SM, and SC are included in this class.
- D. Class IV - Silt, silty clays and clays, including inorganic clays and silts of not to high plasticity and liquid limits. Soil Types MH, ML, CH, and CL are included in this class. Note- Caution should be used in the design and selection of the degree and method of compaction for Class IV soils because of the difficulty in properly controlling the moisture content under field conditions. Some Class IV soils with

medium to high plasticity and with liquid limits greater than 50% (CH, MH, CH-MH) exhibit reduced strength when wet and should only be used for bedding, haunching and initial backfill in arid locations where the pipe embedment will not be saturated by ground water, rainfall and/or exfiltration from the pipeline system. Class IV soils with low to medium plasticity and with liquid limits lower than 50% (CL, ML, CL-ML) also require careful consideration in design and installation to control moisture content but need not be restricted in use to arid locations.

- E. Class V - This class includes the organic soils OL, OH, and PT as well as soils containing frozen earth, debris, rocks larger than 1 1/2 inch (40 mm) in diameter, and other foreign materials. These materials are not recommended for bedding, haunching or initial backfill.

#### DESCRIPTION OF EMBEDMENT MATERIAL CLASSIFICATIONS

SOIL CLASS	SOIL TYPE	DESCRIPTION MATERIAL CLASSIFICATION
Class I Soils *	---	Manufactured angular, granular material, 3/4 to 1 1/2 inches (6 to 40 mm) size, including materials having regional significance such as crushed stone, or rock, broken coral, crushed slag, cinders, or crushed shells.
Class II Soil **	GW	Well-graded gravels and gravel-sand mixtures, little or no fines. 50% or more retained on No. 4 sieve. More than 95% retained on No. 200 sieve. Clean..
	GP	Poorly graded gravels and gravel-sand mixtures, little or no fines. 50% or more retained on No. 4 sieve. More than 95% retained on No. 200 sieve. Clean
	SW	Well-graded sands and gravelly sands, little or no fines. More than 50% passes No. 4 sieve. More than 95% retained on No. 200 sieve. Clean.
	SP	Poorly graded sands and gravelly sand, little or no fines. More than 50% passes No. 4 sieve. More than 95% retained on No. 200 sieve. Clean.
Class III Soil ***	GM	Silty gravels, gravel-sand-silt mixtures. 50% or more retained on No. 200 sieve.
	GC	Clayey gravels, gravel-sand-clay mixtures. 50% or more retained on No. 4 sieve. More than 50% retained on No. 200 sieve.
	SM	Silty sands, sand-silt mixtures. More than 50% passes No. 4 sieve. More than 50% retained on No. 200 sieve.
	SC	Clayey sands, sand-clay mixtures. More than 50% passes No. 4 sieve. More than 50% retained on No. 200 sieve.

Class IV Soils	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands. Liquid limit 50% or less. 50% or more passes No. 200 sieve.
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays. Liquid limit 50% or less. 50% or more passes No. 200 sieve.
	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts. Liquid limit greater than 50%. 50% or more passes No. 200 sieve.
	CH	Inorganic clays of high plasticity, fat clays. Liquid limit greater than 50%. 50% or more passes No. 200 sieve.
Class V Soils	OL	Organic silts and organic silty clays of low plasticity. Liquid limit 50% or less. 50% or less. 50% or more passes No. 200 sieve.
	OH	Organic clays of medium to high plasticity. Liquid limit 50% or less. 50% or more passes No. 200 sieve.
	PT	Peat, muck and other highly organic soils.

\* Soils defined as Class I materials are not defined in ASTM D2487.

\*\* In accordance with ASTM D2487, less than 5% pass No. 200 sieve.

\*\*\* In accordance with ASTM D2487, more than 12% pass No. 200 sieve. Soils with 5% to 12% pass No. 200 sieve fall in borderline classification, e.g. GP-GC.

## 2.02 FILL MATERIAL

- A. Sand Fill: Material shall consist of a clean sand with a fineness modulus of 1.6 to 3.1 and containing not more than 10 percent by weight finer than No. 200 U.S. Standard Sieve.
- B. Earth Fill: Material shall consist of inorganic material free of roots, cobbles and boulders and classified as SM, ML, SC, or CL by ASTM D2487-85 "Standard Methods for Classification of Soils for Engineering Purposes". Earth Fill shall also conform to the following:
  - 1. Liquid Limit = 50 maximum
  - 2. Plasticity Index = 20 maximum
  - 3. Dry Unit Weight = 90 pcf minimum maximum density
- C. Coarse Aggregate (Crushed Stone): Coarse aggregate shall conform to the GDOT Standard Specifications Construction of Transportation Systems, latest edition, Table 800.01 H, Size No. 57.

## 2.03 UNSUITABLE SITE FILL MATERIAL

Material which does not conform to the above classifications (soil classification SP, SW.GM, CH, MH, OH, OL, and PT) may be used as Site Fill material in areas identified on the drawings as "spoil areas", in areas with no structures and or roads and other non-critical areas.

## **2.04 TOPSOIL**

See specification Section "02230 Topsoil".

## **2.05 SHEETING, BRACING AND TIMBERING**

A. Sheeting, Bracing and Timbering: The Contractor shall furnish, place and maintain all sheeting, bracing and timbering required to properly support trenches and other excavations in open cut and to prevent all movement of the soil, pavement, structures, or utilities outside of the trench or pit.

### **1. General**

- a. Cofferdams and bracing design, including computations, shall be prepared before commencing construction operations. Drawings and design computations shall be signed and sealed by a professional engineer registered in the State of Georgia. The drawings and design computations shall be submitted to the Engineer for informational purposes only.
- b. Sheeting, bracing and timbering shall be so placed as to allow the work to be constructed to the lines and grades shown on the Drawings and as ordered by the Engineer.
- c. If at any time the method being used by the Contractor for supporting any material or structure in or adjacent to any excavation is not reasonably safe, the Contractor shall provide additional bracing and support necessary to furnish the added degree of safety.
- d. All sheeting in contact with the concrete or masonry shall be cut off as directed by the Engineer and left in place.

2. Timber: Timber may be substituted for steel sheet piling when approved by the Engineer. Timber for shoring, sheeting or bracing shall be sound and free of large or loose knots, and in good condition. Size and spacing shall be in accordance with OSHA regulations.

3. Steel Sheet Piling: Steel sheet piling shall be the continuous interlock type. The weight, depth, and section modulus of the sheet piling shall be sufficient to restrain the loads of earth pressure and surcharge from existing foundations and/or live loads. Procedure for installation and bracing shall be so scheduled and coordinated with the removal of the earth that the ground under existing structures shall be protected against lateral movement at all times. The Contractor shall provide closure and sealing between sheet piling and existing facilities. Steel piling shall be removed, unless otherwise directed by the Engineer.

4. Remove bracing and sheeting in units when backfill reaches the point necessary to protect the structures and adjacent property. Leave sheeting in place when, in

the opinion of the Engineer, it cannot be safely removed. Cut off sheeting left in place at least two feet below the surface.

## 2.06 FILTER FABRIC

- A. Filter fabric associated with bedding shall be a UV stabilized, spunbonded, continuous filament, needle punched, polypropylene, nonwoven geotextile.
- B. The fabric shall have an equivalent open size (EOS or AOS) of 120 - 70. The fabric shall also conform to the minimum property values listed in the following table:

Fabric Property	Unit	Test Procedure	Average Value	
			Typical	Minimum
Weight	oz/yd <sup>2</sup>	ASTM D 3776	8.3	
Thickness	mils	ASTM D 1777	105	
Grab Strength	lbs.	ASTM D 4632	240	210
Grab Elongation	%	ASTM D 4632	>50	50
Tear Strength	lbs.	ASTM D 4533	100	85
Mullen Burst	psi	ASTM D 3786	350	320
Puncture Resistance	lbs.	ASTM D 4833	115	100
Permittivity	sec <sup>-1</sup>	ASTM D 4491	1.7	
Water Permeability	cm/sec	ASTM D 4491	0.4	
Water Flow Rate	gpm/ft <sup>2</sup>	ASTM D 4491	120	
UV Resistance (500 hrs)	%	ASTM D 4355	>85	
PH			2 – 13	

- C. Filter fabric shall be Polyfelt TS 700, Trevira 1125 or SuPac 7-MP.

## 2.07 CONCRETE

Concrete for initial backfill or encasement shall have a compressive strength of not less than 3,000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and

5-inches. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

## **2.08 FLOWABLE FILL**

Flowable fill, where required for backfill, shall meet the requirements of GDOT Standard Specifications Construction of Transportation Systems, latest edition, Section 600 for Excavatable or Non-Excavatable type.

# **PART 3 EXECUTION**

## **3.01 GENERAL**

- A. Safety: Comply with local regulations and with the provisions of the “Manual of Accident Prevention in Construction” of the Associated General Contractors of America, Inc., Occupational Safety and Health Act and all other applicable safety regulations.
- B. Topsoil
  - 1. Remove all topsoil to a depth at which subsoil is encountered, from all areas under buildings, pavements, and from all areas which are to be cut to lower grades or filled.
  - 2. With the Engineer's approval, topsoil to be used for finish grading may be stored on the site.
  - 3. Other topsoil may be used for fill in non-critical areas with approval of the Engineer.
  - 4. Properly dispose of all excess topsoil in the designated area.
- C. Bracing and Sheeting
  - 1. Furnish, put in place, and maintain all sheeting, bracing, and shoring as may be required to properly support the sides of all excavations and to prevent all movement of earth which could in any way injure the work, adjacent property or workers.
  - 2. Properly support all excavations where necessary to conform to all pertinent rules and regulations and these Specifications, even though, such locations are not indicated on the Drawings.
  - 3. Exercise care in the removal of sheeting, shoring, bracing and timbering to prevent collapse or caving of the excavation faces being supported and damage to the work and adjacent property.
  - 4. Do not leave any sheeting or bracing in the trench or excavation after completion of the work, unless approved by the Engineer.
- D. Obstructions
  - 1. Remove and dispose of all boulders, sidewalks, driveways, pavement, pipes,

- and the like, as required for the performance of the work.
2. Exercise care in excavating around catch basins, inlets and manholes so as to not disturb or damage these structures.
  3. Avoid removing or loosening castings or pushing dirt into catch basins, inlets and manholes.
  4. Damaged or displaced structures or casting shall be repaired, replaced and dirt entering the structures during the performance of the work shall be removed at no additional cost to the Owner.

E. Utilities to be Abandoned

1. When pipes, conduits, sewers, or other structures are removed from the trench, leaving dead ends in the ground, such ends shall be fully plugged or sealed with brick and non-shrink grout.
2. Abandoned structures such as manholes or chambers shall be entirely removed.
3. All materials from abandoned utilities shall be removed from the site.
4. All salvageable materials shall become the property of the Owner.
5. All equipment to be salvaged is noted in the Specifications and shall be turned over to the Owner at a designated location.

F. Extra Earth Excavation

1. In case soft or excessively wet material which, in the opinion of the Engineer, is not suitable, is encountered below the final subgrade elevation of an excavation or underneath a structure, the Engineer may order the removal of this material and its replacement with crushed stone, filter fabric, or other suitable material in order to make a suitable foundation for the construction of the structure.

G. Cutting Paved Surfaces and Similar Improvements

1. Remove existing pavement as necessary for installing pipe utilities and appurtenances or as otherwise shown on the Drawings.
2. Before removing any pavement, mark the pavement neatly, paralleling pipe lines and existing street lines. Space the marks the width of the trench.
3. Break asphalt pavement along the marks using rotary saws or other suitable tools. Break concrete pavement along the marks by use of scoring with a rotary saw and breaking below the score by the use of jackhammers or other suitable tools.
4. Do not pull pavement with machines until completely broken and separated from pavement to remain.
5. Do not disturb or damage the adjacent pavement. If the adjacent pavement is disturbed or damaged, remove and replace the damaged pavement. No additional payment will be made for removing and replacing damaged adjacent pavement.
6. Remove and replace sidewalks disturbed by construction for their full width and to the nearest undisturbed joint.
7. The Contractor may tunnel under curbs that are encountered. Remove and replace any curb disturbed by construction to the nearest undisturbed joint.

### **3.02 EXCAVATION**

#### **A. Method**

1. All excavation shall be by open cut from the surface except as indicated on the Drawings.
2. All excavations for pipe appurtenances and structures shall be made in such a manner, and to such depth and width, as will give ample room for building the structures, and for bracing, sheeting, and supporting the sides of the excavation, for pumping and draining groundwater which may be encountered, and for the removal from the excavation of all materials excavated.
3. Take special care so that the soil below the bottom of the structure to be built is left undisturbed.

#### **B. Grades: Excavate to grades indicated on the Drawings. Where excavation grades are not indicated on the Drawings, excavate as required to accommodate installation.**

#### **C. Disposal of Excavated Material**

1. Remove and properly dispose of all excavated material not needed to complete filling, backfilling and grading.
2. Dispose of excess earth and rock excavated materials at locations on-site designated by the Engineer. Off-site disposal of all other material shall be and in accordance with all requirements of federal, state, county, and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or on any street. No debris shall be deposited on any private property, except by written consent of the property owner. In no case shall any material be shoved onto abutting private properties, or be buried in embankments or trenches on the Project.

### **3.03 EXCAVATING FOR STRUCTURES**

#### **A. Earth Excavation: Earth excavation shall include all substances to be excavated other than rock. Earth excavation for structures shall be to limits not less than two feet outside wall lines, to allow for formwork and inspection, and further as necessary to permit the trades to install their work. All materials loosened or disturbed by excavation shall be removed from surfaces to receive concrete or crushed stone.**

#### **B. Excavation for Foundations: Footings and slabs on grades shall rest on undisturbed earth, rock or compacted materials to insure proper bearing.**

1. **Unsuitable Foundation Material:** Any material, in the opinion of the Engineer, which is unsuitable for foundation shall be removed and replaced with compacted crushed stone, or with compacted fill material as directed by the Engineer. No determination of unsuitability will be made until all requirements for dewatering are satisfactorily met.
2. **Foundation in Rock:** Foundations for a structure shall be on similar materials. Should excavation for a foundation be partially in rock, the Contractor shall

undercut that portion of the rock 12-inches and bring the excavation to grade with compacted crushed stone.

3. Pipe Trenches Beneath Structures: Where piping or conduit passes beneath footings or slabs resting on grade, trenches shall be excavated to provide a minimum 6-inch clearance from all surfaces of the pipe or conduit. The trench shall be backfilled to the base of the structure with concrete.
4. Unauthorized Excavation: Care shall be taken that excavation does not extend below bottom levels of footings or slabs on earth or rock. Should the excavation, through carelessness or neglect, be carried below such levels, the Contractor shall fill in the resulting excess excavation with concrete under footings and compacted crushed stone or other approved material under slabs. Should excavation be carried beyond outside lines of footings such excess excavation shall be filled with concrete, or formwork shall be provided, as directed by the Engineer.

C. Unsuitable Bearing

1. If suitable bearings for foundations are not encountered at the elevations indicated on the Drawings, immediately notify the Engineer.
2. Do not proceed further until instructions are received.

### **3.04 DEWATERING REQUIREMENT**

- A. The Contractor may use any dewatering method he deems feasible so long as it results in working in the dry and stable soil conditions.
- B. The Contractor shall conform and meet all conditions, obtain necessary permits and requirements of the regulatory agencies that have jurisdiction.
- C. It is the intent of these specifications that an adequate dewatering system be installed to lower and control the groundwater in order to permit excavation, construction, grading and the placement of fill materials, all to be performed under dry conditions. The dewatering system shall be adequate to pre-drain the water-bearing strata above and below the bottom of the excavation.
- D. The Contractor shall be solely responsible for the arrangement, location and depths of dewatering system necessary to accomplish the work described under this section of the specifications. The dewatering shall be accomplished in a manner that will reduce the hydrostatic head below any excavation to the extent that the water level in the construction area are a minimum of two (2) feet below the prevailing excavation surface and any surface to be compacted; will prevent the loss of fines, seepage, boils, quick conditions, or softening of the foundation strata; will maintain stability of the sides and bottom of the excavation; and will result in all construction operations being performed in the dry.
- E. The Contractor shall promptly dispose of all water removed from the excavations in such a manner as will not endanger public health, damage public or private property, or affect adversely any portion of the work under construction or completed by him or any other Contractor. Contractor shall obtain written permission from the Owner

for any property involved before digging ditches or constructing water courses for the removal of water.

- F. The disposal of water from the dewatering system shall meet the requirements of all regulatory agencies having jurisdiction.
- G. If the dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system, then loosening of the foundation strata, or instability of the slopes, or damage to the foundations or structures may occur. The supply of all labor and materials, and the performance of all work necessary to carry out additional work for reinstatement of the structures of foundation soil resulting from such inadequacy or failure shall be undertaken by the Contractor subject to the approval of the Engineer, and at no additional expense to the Owner.

### **3.05 ROCK EXCAVATION**

- A. Definition of Mass Rock (only for payment purposes where payment is on a unit quantity basis): Any material which cannot be excavated with a single-tooth ripper drawn by a crawler tractor having a minimum draw bar pull rated at not less than 56,000 pounds (comparable to Caterpillar D 8K or comparable to Caterpillar 973 front-end loader, and occupying an original volume of at least one cubic yard). The Engineer shall be the sole determinate as to the limits to which the material is classified as rock.
- B. Definition of Trench Rock (only for payment purposes where payment is on a unit quantity basis): Any material which cannot be excavated with a backhoe having a bucket curling force rated at not less than 25,700 pounds (Caterpillar Model 225 or equivalent), and occupying an original volume of at least one-half (1/2) cubic yards.
- C. Excavation: Where rock is encountered within excavation for structures, it shall be excavated to the lines and grades indicated on the Drawings or as otherwise directed by the Engineer. The Contractor shall be responsible for obtaining any blasting permits required.
- D. Blasting: Blasting operations shall be conducted in accordance with all existing ordinances and regulations. All structures shall be protected from the effects of the blast. Blasting shall be performed and supervised by qualified and licensed workers. Dispose of excavated rock in accordance with applicable federal, state, county and local regulations.
- E. If excess excavation is made or the material becomes disturbed so as to require removal below final subgrade elevations or beyond the prescribed limits, the resulting space shall be refilled with concrete in accordance with Section 2.07 of this Specification

### **3.06 COMPACTION**

- A. Fill materials supporting roadways, parking areas, sidewalks, structures, and buildings and backfill around structures shall be compacted to 95 percent of the standard proctor

density. The top 12-inches of fill materials supporting structures, concrete pads, pavement, curb and gutter shall be compacted to 98 percent of the standard proctor density. Fill placed for general site grading shall be compacted to 90 percent of the standard proctor density.

- B. Compaction of embankments shall be by vibratory sheepsfoot or pad-foot rollers with staggered, uniformly spaced knobs and suitable cleaning devices. The projected area of each knob and the number and spacing of the knobs shall be such that the total weight of the roller and ballast when distributed over the area of one row of knobs shall be 250 psi. Placement and compaction of materials shall extend at least 5 feet beyond the final contours sufficiently to insure compaction of the material at the resulting final surface. Final contours shall then be achieved by a tracked bulldozer shaping the face of the embankment.
- C. Compaction of backfill next to walls shall be accomplished with hand-powered tamping equipment. The backfill shall be placed in 8-inch maximum lifts, with each lift compacted to 95 percent of standard proctor density.
- D. If tests indicate that density of fill is less than that specified, the area shall be, as directed by the Engineer, either recompacted or undercut, filled, and compacted until specified density is achieved.

### **3.07 FILL**

#### **A. Controlled Fill**

- 1. The fill for roadways, parking areas, walks, structures, and building slabs on grade shall be controlled fill.
- 2. After the existing ground or excavated area has been proofrolled and examined by the Engineer, all holes and other irregularities shall be filled and compacted before the main fill is placed.
- 3. The fill shall be placed in even layers not exceeding 8-inches in depth and shall be thoroughly compacted as herein specified.
- 4. If an analysis of the soil being placed shows a marked difference from one location to another, the fill being placed shall not be made up of a mixture of these materials.
- 5. Each different type of material shall be handled continuously so that field control of moisture and density may be based upon a known type of material.
- 6. No fill shall be placed following a heavy rain without first making certain on isolated test areas that compaction can be obtained without damage to the already compacted fill.

#### **B. Proofrolling**

- 1. All areas where roadways, parking areas, sidewalks, structures, and buildings are to be constructed on cut areas, compacted fill, and other areas where indicated on the Drawings, shall be proofrolled to detect soft spots prior to the placement of fill material or building foundations.

2. Proofrolling shall be performed using a fully loaded tandem-axle dump truck 20 tons or other suitable pneumatic tired equipment over the subgrade before the subgrade is shaped.
3. Proofrolling shall be witnessed by the Engineer.
4. Subgrade shall be proofrolled with 10 overlapping passes of the roller. Depressions that develop during the proofrolling operation shall be filled with suitable material and those filled areas shall be proofrolled with six passes of the roller. If, after having been filled and proofrolled, the subgrade areas that still “pump” or “rut”, shall be further evaluated by a geotechnical engineer, and remedial work be determined based on the conditions found at locations under structures or pavement. The contractor shall execute remedial work determined by the geotechnical engineer to achieve a subgrade acceptable to the Engineer.
5. After the proof rolled subgrade has been accepted by the Engineer, the surface of the subgrade shall be finish rolled with a smooth steel wheel roller weighing not less than 10 tons. Finished surface of the subgrade shall be within a tolerance of 1/4-inch at every point.
6. Conduits, pipes, culverts, and underdrains shall be neither disturbed nor damaged by proofrolling operations. Rollers shall neither pass over, nor approach closer than five feet to, conduits, pipes, culverts, and underdrains unless the tops of those products are deeper than three feet.

C. Placement

1. Prior to placement of any material in embankments, the area within embankment limits shall be stripped of topsoil and all unsuitable materials removed in accordance with this Section. The area shall then be scarified to a depth of at least 6-inches.
2. Fill materials shall be placed in continuous, approximately horizontal layers extending the full width of the embankment cross-section and the full dimension of the excavation where practical and having an uncompacted thickness of not over 8-inches.

D. Final Grading: Upon completion of construction operations, the area shall be graded to finish contour elevations and grades shown on the Drawings. Graded areas shall be made to blend into conformation with remaining ground surfaces. All surfaces shall be left smooth and free to drain.

E. Excess Material: Surfaces and slopes of waste fills shall be left smooth and free to drain.

F. Moisture

1. Fill materials shall be placed at optimum moisture content within practicable limits, but not less or more than two percent of optimum. Optimum moisture shall be maintained by sprinkling the layers as placed or by allowing materials to dry before placement.
2. If fill material is too wet, provide and operate approved means to assist the drying of the fill until suitable for compaction.
3. If fill material is too dry, provide and operate approved means to add moisture

to the fill layers.

### **3.08 BACKFILLING**

- A. Backfill carefully to restore the ground surface to its original condition. Dispose of excess material in accordance with this Section.
- B. Compact backfill underlying roadways, parking areas, sidewalks, structures and buildings in accordance with the requirements of Article 3.06 of this Section.
- C. Backfilling Around Structures
  - 1. General
    - a. Remove debris from excavations before backfilling.
    - b. Do not backfill against foundation walls until so directed by the Engineer nor until all indicated perimeter insulation and/or waterproofing is in place.
    - c. Protect such insulation and/or waterproofing during filling operations.
    - d. Do not backfill against water retaining structures until successful leakage tests have been completed.
    - e. Wherever possible, backfilling shall be simultaneous on both sides of walls to equalize lateral pressures.
    - f. Do not backfill against walls until all permanent construction is in place to furnish lateral support on both top and bottom of wall.
    - g. Backfilling against walls shall take place after all the concrete in the affected members has attained the specified strengths.
    - h. To prevent excessive lateral pressure on external walls, large compaction equipment shall not be allowed within a zone wall footing.
  - 2. Materials: Backfill material placed against structures built or encountered during the work of this Section shall be suitable fill material. No broken concrete, bricks or similar materials will be permitted as backfill.

### **3.09 GRADING**

- A. General: Perform all rough and finish grading required to attain the elevations indicated on the Drawings. Perform finish grading to an accuracy of  $\pm 0.10$  foot.
- B. Treatment After Completion of Grading
  - 1. After grading is completed, permit no further excavation, filling or grading, except with the approval of the Engineer.
  - 2. Use all means necessary to prevent the erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

### **3.10 SETTLEMENT**

- A. The Contractor shall be responsible for all settlement of backfill, fills and embankments which may occur within one year after final acceptance of the Work by the Owner.

- B. The Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within 30 days after receipt of written notice from the Engineer or Owner.

### **3.11 CLEAN-UP**

- A. Leave unused materials in a neat, compact stockpile.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

**END OF SECTION**

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## **SECTION 02370 EROSION AND SEDIMENTATION CONTROL**

### **PART 1 GENERAL**

#### **1.01 SCOPE**

- A. This section covers the control measures required but not limited to during construction until final acceptance to control water run-off, erosion, sedimentation, and unreasonable amounts of dust. Measures to adequately control erosion and siltation throughout project construction are required whether or not they are shown on the plans. This control shall be accomplished through the use of berms, dikes, sediment basins and barriers, slope drains, grassing, and other devices as outlined in the **Georgia Erosion and Sedimentation Control Act of 1975 and any additional federal or local ordinances. All erosion and sediment control measures shall be designed for a 25-year storm event and installed according to the Manual for Erosion and Sediment Control in Georgia (1975 and as amended in the latest edition) and The Georgia Department of Transportation, GDOT Standard Specifications Construction of Transportation Systems, latest edition.**
- B. The section also specifies the subsequent removal of temporary erosion and sedimentation controls.
- C. Grassing in accordance with this Specification is considered a temporary measure to prevent soil erosion until the permanent grassing can be established. See Section 02920 Lawns and Grassing for permanent grassing requirements.
- D. Land disturbance activity shall not commence until the Commercial Development Permit/Land Disturbance Permit has been issued.
- E. The LDP/Land disturbance permit shall be obtained and paid for by the Owner.

#### **1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Section 01510 – Temporary Facilities.
- B. Section 02200 – Site Preparation.
- C. Section 02920 - Lawns and Grassing.
- D. Section 02921 - Sodding.

### 1.03 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of these Specifications as if incorporated herein, except as modified herein to the extent referenced. Referenced standards and recommended practices shall be the latest versions of any such documents. The contractor shall be responsible for complying with requirements of these regulations.
  
- B. Environmental Protection Agency (EPA) Regulations:
  - 1. 40 CFR 112 Oil Pollution Prevention
  - 2. 40 CFR 116 Designation of Hazardous Substances
  - 3. 40 CFR 122 EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES)
  - 4. 40 CFR 136 The National Pollutant Discharge Elimination System (NPDES)
  - 5. 40 CFR 257 Criteria for Classification of Solid Waste Disposal Facilities and Practices
  - 6. 40 CFR 258 Criteria for Municipal Solid Waste Landfills (Effective 10-9-93)
  - 7. 40 CFR 261 Identification and Listing of Hazardous Waste
  - 8. EPA 833-B-92-001 "NPDES Storm Water Sampling Guidance Document"
  
- C. Georgia Environmental Protection Division (EPD) Rules:
  - 1. Chapter 391-3-4 Solid Waste Management Rules

### 1.04 QUALITY ASSURANCE

- A. The temporary and permanent erosion and sedimentation control measures shown on the Drawings are minimum requirements. Any additional erosion and sedimentation control measures required by the Contractor's means, methods, techniques and sequence of operation will be installed by the Contractor at the unit price bid indicated on the Bid Form.
  
- B. Basic Principles
  - 1. Coordinate the land disturbance activities to fit the topography, soil types and conditions.
  - 2. Minimize the disturbed area and the duration of exposure to erosive elements.
  - 3. Provide temporary or permanent stabilization to disturbed areas immediately after rough grading is complete.
  - 4. Safely convey run-off from the site to a stable outlet to prevent flooding and damage to downstream facilities resulting from increased runoff from the site.
  - 5. Retain sediment on-site that was generated on-site.
  - 6. Minimize encroachment upon watercourses.

C. Implementation:

1. The Contractor is solely responsible for the control of erosion within the Project site and the prevention of sedimentation from leaving the Project site or entering waterways.
2. The Contractor shall install temporary and permanent erosion and sedimentation controls, which will ensure that runoff from the disturbed area of the Project site, shall pass through a filter system before exiting the Project site.
3. The Contractor shall provide temporary and permanent erosion and sedimentation control measures to prevent silt and sediment from entering the waterways.
4. The Contractor shall limit land disturbance activity to those areas shown on the Drawings.
5. The Contractor shall maintain erosion and sedimentation control measures within disturbed areas on the entire site at no additional cost to the Owner until the acceptance of the Project. Maintenance shall include mulching, re-seeding, re-sodding, clean-out of sediment barriers and sediment ponds, replacement of washed-out or undermined rip rap and erosion control materials, to the satisfaction of the Engineer.
6. All fines imposed for improper erosion and sedimentation control shall be paid by the Contractor.

## PART 2 PRODUCTS

### 2.01 BEST MANAGEMENT PRACTICES

The vegetative measures and structural practices shall be in accordance with chapter six of the "Manual for Erosion and Sediment Control in Georgia" as currently amended.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. The 24-hour contact is: **Chuck Combs, Ph: (404) 849-6288.**
- B. All erosion and sedimentation control devices and structures shall be inspected by the Contractor at least once a week and immediately after each rainfall occurrence. Any device or structure found to be damaged will be repaired or replaced by the end of the day.
- C. All erosion and sedimentation control measures and devices shall be constructed and maintained as indicated on the Drawings or specified herein until adequate permanent disturbed area stabilization has been provided and accepted by the Engineer. Once adequate permanent stabilization has been provided and accepted by the Engineer, all temporary erosion and sedimentation control structures and devices shall be removed.

- D. The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to, or concurrent with, land-disturbing activities.

### 3.02 INSTALLATION

#### A. Construction Exit

1. Construction exit(s) shall be placed as shown on the Drawings and as directed by the Engineer. A construction exit shall be located at any point traffic will be leaving a disturbed area to a road, driveway, sidewalk or parking area.
2. Placement of Construction Exit Material: The ground surface upon which the construction exit material is to be placed shall be prepared to a smooth condition free from obstructions, depressions or debris. The plastic filter fabric shall be placed to provide a minimum number of overlaps and a minimum width of one foot of overlap at each joint. The stone shall be placed with its top elevation conforming to the surrounding roadway elevations. The stone shall be dropped no more than three feet during construction.
3. Construction Exit Maintenance: The Contractor shall regularly maintain the exit with the top dressing of stone to prevent tracking or flow of soil onto public rights-of-way and paved surfaces as directed by the Engineer.
4. Construction Exit Removal: Construction exit(s) shall be removed and properly disposed of offsite when the disturbed area has been properly stabilized, the tracking or flow of soil onto public rights-of-way or paved surfaces has ceased and as directed by the Engineer.

#### B. Sediment Barriers

1. Sediment barriers shall include, but are not necessarily limited to, silt fences, hay bales, rock check dams, inlet sediment traps or any other device which prevents sediment from exiting the disturbed area.
2. Silt fences, hay bales and rock check dams shall not be used in any flowing stream, creek or river.
3. Sediment barriers shall be installed as shown on the Drawings and as required by the Contractor's construction sequence and methods.
4. Sediment barriers shall be maintained to ensure the depth of impounded sediment is no more than one-half of the original height of the barrier. Torn, damaged, destroyed or washed-out barriers shall be repaired, reinforced or replaced with new material.
5. Sediment Barrier Removal
  - a. Sediment barrier shall be removed once the disturbed area has been stabilized with a permanent vegetative cover and the sediment barrier is no longer required.
  - b. Accumulated sediment shall be removed from the barrier and spread over excess soil disposal area.
  - c. All non-biodegradable parts of the barrier shall be disposed of properly. Used bales may be spread evenly across the disposal area as a mulching material.

- d. The disturbed area created by barrier removal shall be permanently stabilized.

C. Rip Rap

1. Rip rap shall be placed as shown on the Drawings and as directed by the Engineer. Rip rap shall be placed at all points where natural vegetation is disturbed on the banks of streams or drainage ditches. Compact backfill and place rip rap to prevent subsequent settlement and erosion. This requirement applies equally to construction along side a stream or drainage ditch as well as crossing a stream or drainage ditch.
2. When trenching across a stream or drainage ditch, rip rap to be placed shall be brought to the correct lines and grades before placement is commenced. Where filling of depressions is required, the new material shall be compacted with hand or mechanical tampers. Unless at creek banks or otherwise shown or specified, rip rap shall begin in a toe ditch constructed in original ground, and the side next to the fill or cut shall have that same slope. After the rip rap is placed, the toe ditch shall be backfilled and the excess dirt hauled off of the site and disposed of properly.

D. Filter Fabric

1. Plastic filter fabric shall be placed under all rip rap unless shown or specified otherwise.
2. Filter fabric shall not be placed under rip rap on stream or drainage ditch crossings.
3. The surface to receive filter fabric shall be prepared to a smooth condition free from obstructions, depressions and debris. The filter fabric shall be installed with the long dimension running up the slope and shall be placed to provide a minimum number of overlaps. The fabric shall be placed to provide a minimum width of one foot of overlap at each joint. The fabric shall be anchored in place with securing pins of the type recommended by the fabric manufacturer. Pins shall be placed on or within 3-inches of the centerline of the overlap. The fabric shall be placed loosely to avoid stretching and tearing during the placement of the stone. The fabric shall be protected at all times during construction from clogging due to clay, silts, chemicals or other contaminants. Contaminated fabric or fabric damaged during installation or during placement or rip rap shall be removed and replaced with uncontaminated and undamaged fabric at no additional cost to the Owner.

### 3.03 INSTALLATION (VEGETATIVE MEASURES)

A. Mulching

Temporary mulching or grassing may be required by the Engineer where construction or conditions prohibit completion in a continuous manner and surface erosion is probable. See Section 02920 - Lawns and Grassing and Section 02921 – Sodding for additional requirements.

B. Grassing

1. Seed rate, fertilization and other requirements shall be provided as shown on the Drawings.
2. Temporary stabilization: Temporary stabilization shall be provided as shown on the Drawings and conforming to these specification to control erosion on the site. Temporary stabilization shall be provided to any area which will not receive permanent stabilization within the next 14 calendar days. Partial payment requests may be withheld for those portions of the Project not complying with this requirement.
3. Permanent Stabilization
  - a. Permanent stabilization shall be provided as shown on the Drawings and conforming to specification Sections 02920 and 02921 to control erosion on the site. Permanent stabilization shall be provided to all areas of land disturbance within seven calendar days of the completion of land disturbance for nay area greater than 0.25 acre. Partial payment requests may be withheld for those portions of the Project not complying with requirement.
  - b. Where permanent stabilization cannot be immediately established because of an inappropriate season, the Contractor shall provide temporary stabilization. The Contractor shall return to the site at the appropriate season to provide permanent stabilization in areas that received only temporary stabilization.

C. Matting and Blankets

Matting and Blankets (Mb) shall be installed on all slopes four horizontal to one vertical and steeper. The Mb shall be installed immediately after slope is final graded and seeding is complete. The matting shall be secured with staples one per square yard.

### 3.04 FIELD QUALITY CONTROL

All erosion and sedimentation control devices and structures shall be inspected by the Contractor at least once a week and immediately prior to each rainfall occurrence. Any device or structure fund to be damaged will be repaired or replaced by the end of the day. Sediment ponds shall be cleaned out prior to the silt reaching the height or elevation shown on the Drawings.

### 3.05 CLEAN-UP

- A. Dispose of all excess erosion and sedimentation control materials in a manner satisfactory to the Engineer.
- B. Final clean-up shall be performed in accordance with the requirements of these Specifications.
- C. Dispose of excess earth and rock excavated materials at locations on site designated

by the Engineer. Off-site disposal of all other material and unsuitable excavated material shall be and in accordance with all requirements of federal, state, county, and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or on any street. No debris shall be deposited on any private property, except by written consent of the property owner. In no case shall any material be shoved onto abutting private properties or be buried in embankments or trenches on the Project.

**END OF SECTION**

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## **SECTION 02920 LAWNS AND GRASSING**

### **PART 1 GENERAL**

#### **1.01 SCOPE**

This section pertains to seeding work, including preparing the seedbed, furnishing and placing of topsoil, seed and other required materials for a complete installation to the limits of construction and specified herein. Seeding operations shall be performed on all newly graded earth areas not otherwise specified covered by structures, pavements and/or surfacings, riprap, sod, sprigging, walkways, and other items of a similar nature; on all cleared and/or grubbed areas which are to remain as finish grade surfaces and not to be excavated or embankments constructed thereon; on all existing off site and on site turfed earth surfaces which are disturbed by construction operations and which are to remain as finish grade surfaces; and at all other locations which may be designated on the drawings or specified herein. The contractor shall follow the GDOT Standard Specifications Construction of Transportation Systems, latest edition (GDOTSS) Section 700, 882, 890 and 891 and/or pages 6-35 thru 6-60 of the Manual for Erosion and Sediment Control in Georgia (1975 and as amended in the latest edition).

#### **1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Erosion and Sedimentation Control - Section 02370
- B. Sodding – Section 02921 (If Indicated on the Drawings)

### **PART 2 PRODUCTS**

#### **2.01 TOPSOIL**

Topsoil for planting shall be a rich friable loam containing a large amount of humus and shall be original surface sandy loam, topsoil of good rich, uniform quality, free from any material such as hard clods, stiff clay, hardpan, partially disintegrated stone, pebbles larger than 1/2-inch in diameter, lime, cement, bricks, ashes, cinders, slag, concrete, bitumen or its residue, boards, sticks, chips, or other undesirable material harmful or unnecessary to plant growth. Topsoil shall be reasonably free from perennial weeds and perennial weed seeds, and shall not contain objectionable plant material, toxic amounts of either acid or alkaline elements or vegetable debris undesirable or harmful to plant life. Bermuda grass roots in topsoil will not be accepted, unless otherwise approved by the Engineer.

Topsoil shall be natural topsoil without admixture of subsoil material, and shall be classifiable as loam, silt loam, clay loam, or a combination thereof.

## 2.02 GRASS SEED

All seeds shall be labeled in accordance with U.S.D.A. Rules and Regulations. Seeds shall be packaged in suitable containers in accordance with the Georgia Seed Laws, Rules and Regulations currently in effect. No seed shall be used which has become molded, wet or otherwise damaged. Seed shall be tested by the Georgia Department of Agriculture for the purity and germination within six months prior to the date of sowing.

1. Grass seed on level or slightly sloping ground shall consist of the following for the planting dates specified:
  - (a) March 1 to June 30

Common Bermuda (hulled)	10 lbs./acre
Tall Fescue	50 lbs./acre
  - (b) August 1 to November 1

Tall Fescue	50 lbs./acre
Common Bermuda (unhulled)	10 lbs./acre
  - (c) November 1 to March 1

Common Bermuda (unhulled)	10 lbs./acre
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2. Grass seed on slopes 3:1 or steeper and infrequently mowed areas shall consist of the following for the planting dates specified:
  - (a) March 1 to June 15

Weeping Lovegrass	5 lbs./acre
Sericea Lespedeza (scarified)	60 lbs./acre
  - (b) August 1 to November 1

Tall Fescue	50 lbs./acre
Sericea Lespedeza (unscarified)	75 lbs./acre
  - (c) November 1 to March 1

Common Bermuda (unhulled)	10 lbs./acre
Sericea Lespedeza (unscarified)	75 lbs./acre

When as directed by the Engineer, an approved quick growing species of grass seed such as rye, Italian rye, millet or other cereal grass, shall be applied at a rate of 30 lbs./acre in conjunction with and in addition to the seed mixture specified above.

## 2.03 SPRIGS

Bermuda, common, healthy living stolons native to locality of project. Plant on day of removal from growing location. Plant sprigs from March 15 to July 15.

## **2.04 MULCH**

- A. Dry Mulch: Dry mulch shall be straw or hay, consisting of oat, rye or wheat straw, or of pangola, peanut, coastal Bermuda or Bahia grass hay. Only undeteriorated mulch which can be readily cut into the soil shall be used. Application rate shall be 2 ½ tons per acre.
- B. Mulch for hydroseeding: This material shall consist of wood cellulose fiber applied at 500 lbs./acre with dye color equal to Weyerhaeuser Company, or Conway Corporation material used for "hydroseeding" and suitable for this purpose.

## **2.05 FERTILIZER**

Fertilizer shall be of an accepted and approved commercial brand. Fertilizer shall be a ready mixed material containing the soil nutrients as specified and in a suitable form compatible with the equipment used to achieve uniform distribution of the fertilizer. The fertilizer mixture shall contain the following nutrients expressed in per cent of the total weight: 6% nitrogen, 12% available phosphoric acid, and 12% water soluble potash (6-12-12) analysis. Container tags shall have the name and address of the manufacturer, the brand name, net weight, and chemical composition of analysis. Fertilizer shall be applied at 1500 lbs./acre.

## **2.06 LIME**

Agricultural lime shall be within the specifications of the Georgia Department of Agriculture. Ground limestone is calcitic or dolomitic limestone ground so that 90 percent of the material shall pass a 10-mesh sieve, not less than 50 percent will pass through a 50-mesh sieve and at least 25% shall pass a 100-mesh sieve. Lime shall be applied as indicated by soil test, or the rate of 1 to 2 tons per acre.

## **2.07 WATER**

The water used in the grassing operations may be obtained from any approved spring, pond, lake, stream or municipal water system. The water shall be free of excess and harmful chemicals, acids, alkalies, or any substance which might be harmful to plant growth or obnoxious to traffic.

## **2.08 SOD**

Shall be healthy living, disease and weed free grass that has been freshly cut.

## **PART 3 EXECUTION**

### **3.01 HYDROSEEDING**

- A. The materials for grassing shall consist of a thoroughly mixed slurry of grass seed, fertilizer, lime and mulch as specified. The application rate for wood fiber mulch shall be approximately 500 lbs./acre. All materials shall be discharged within one hour after being combined in the hydroseeder.
- B. Each kind of leguminous seed shall be inoculated separately with the appropriate commercial culture according to instructions of the manufacturer of the material. All inoculated seed shall be protected from the sun and shall be planted the same day it is inoculated.
- C. Equipment for mixing and applying the slurry shall be especially designed for this purpose. It shall be capable of applying a uniform mixture over the entire area to be seeded. The slurry mixture shall be agitated during application to keep the ingredients thoroughly mixed. A suitable metering device to determine the rate of application and assist in obtaining uniform coverage of the grassed areas shall be incorporated as part of the equipment.
- D. Ground preparation for hydroseeding shall be the same as for conventional seeding.
- E. Hydroseeding shall not be performed when windy weather prevents even distribution; when the prepared surface is crusted; or when the ground is frozen, wet or otherwise in a non-tillable condition.

### **3.02 CONVENTIONAL SEEDING**

#### **A. Grading and Shaping**

Grade and shape to finish contours and to allow practical use of equipment.

#### **B. Seedbed Preparation**

##### **1. Broadcast plantings:**

- a. Tillage as a minimum shall: adequately loosen the soil to a depth of 4 to 6 inches; alleviate compaction; incorporate lime and fertilizer; smooth and firm the soil; allow for the proper placement of seed, sprigs, or plants; and allow for the anchoring of straw or hay mulch if a disk is to be used.
- b. Tillage may be done with any suitable equipment.
- c. Tillage may be done on the contour where feasible.
- d. On slopes too steep for the safe operation of tillage equipment, the soil surface will be pitted or trenched across the slope with appropriate hand tools to provide a place 6 to 8 inches apart in which seed may lodge and germinate.

2. Individual plants:
  - a. Where individual plants are to be set, the soil will be well prepared by excavating holes, opening furrows, or dibble planting.
  - b. For nursery stock plants, holes shall be large enough to accommodate roots without crowding.

### 3.03 SPRIGS

Separate or shred and broadcast over area prepared for planting at 40 cu. ft. per acre. Harrow into ground with disc turned straight.

### 3.04 LIME/FERTILIZER APPLICATION

Lime and fertilizer will be applied uniformly during land preparation so that it will be mixed with the soil during seedbed preparation. On steep surfaces, scarify slope prior to broadcasting lime and fertilizer.

### 3.05 PLANTING

- A. Seeding will be done on a freshly prepared and firmed seedbed. For broadcast planting, use a cultipacker-seeder, drill, rotary seeder, other mechanical seeder, or hand seeding to distribute the seed uniformly over the area to be treated. Cover the seed lightly with a cultipacker or other suitable equipment.
- B. No-till seeding is permissible into annual cover crops when planting is done following maturity of the cover crop or if the temporary cover stand is sparse enough to allow adequate growth of the permanent species.
- C. No-till seeding must be done with appropriate no-till seeding equipment. The seed must be uniformly distributed and planted at the proper depth.

### 3.06 MULCHING

All seeded areas shall be mulched. Soil retention blankets, erosion control netting, and other manufactured materials may be required in addition to mulch on unstable soils and concentrated flow areas. Mulch shall be spread uniformly within 24 hours after seeding.

### 3.07 WATER, MAINTENANCE AND RESEEDING

- A. Contractor shall be responsible for maintaining the proper moisture content of the soil to insure adequate plant growth until a satisfactory stand of grass is obtained. Watering shall be performed to maintain an adequate water content in the soil.
- B. **The Contractor shall mow and maintain all seeded areas without additional payment until final acceptance of the work by the Owner, and any regrading, refertilizing, reliming, reseeding or remulching shall be done at his own expense.** Seeding work shall be repeated on defective areas until a satisfactory uniform stand of grass is accomplished. A satisfactory stand of grass is defined as grass that covers at least 98% of the total area with no bare spots larger than one square foot and bare

spots shall be scattered such that bare areas do not comprise more than 1/100 of any given area. **Damage resulting from erosion, gulleys, washouts, or other causes shall be repaired by filling with topsoil, compacting, and repeating the seeding work at the Contractor's expense.**

### **3.08 SODDING**

See Section 02921 Sodding for additional sod requirements. Smooth grade the specified area to be planted. Apply amendments and fertilizer requirements as determined in soil test. Planting area shall be free of stumps, roots, large stone over 4" diameter, and any other debris. Apply fertilizer and rake into the soil surface. Lightly wet soil surface if dry. Lay the sod at right angles to any major water flow. Sod shall be pinned and secured on slopes greater than 6:1. Sod joints shall be staggered between rows. Sod shall be watered after installation each day.

**END OF SECTION**

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## **SECTION 02921 SODDING**

### **PART 1 GENERAL**

#### **1.01 SCOPE**

Sodding shall consist of establishing certain critical areas with sod as designed (on the Drawings) (or designated by the Engineer). Sodding is to be used in waterways, swales and around drop inlets.

### **PART 2 PRODUCTS**

#### **2.01 SOD**

Sod shall consist of a live, dense, well-rooted growth of turf grass species as noted on the Drawings. The sod shall be free from Johnson grass, nut grass and other obnoxious grasses and shall be of suitable character for the purpose intended and for the soil in which it is to be planted. It shall be uninjured at the time of planting.

#### **2.02 FERTILIZER**

- A. Fertilizer (10-10-10) used in connection with sodding, shall contain 10 percent nitrogen, 10 percent phosphoric acid and 10 percent potash. The fertilizer shall be furnished in standard containers with the name, weight and guaranteed analysis of the contents clearly marked. The containers shall ensure proper protection in handling and transporting the fertilizer. All commercial fertilizer shall comply with local, state and federal fertilizer laws.
- B. Ammonium nitrate shall be a standard commercial product, shall conform to the requirements for other commercial fertilizers as specified above, and shall have a minimum of 32-1/2 percent nitrogen.

#### **2.03 LIME**

Agricultural lime shall be within the specifications of the Georgia Department of Agriculture. Ground limestone is calcitic or dolomitic limestone ground so that 90 percent of the material shall pass a 10-mesh sieve, not less than 50 percent will pass through a 50-mesh sieve and at least 25% shall pass a 100-mesh sieve. Lime shall be applied as indicated by soil test, or the rate of 1 to 2 tons per acre.

#### **2.04 WEATHER LIMITATIONS**

Sod shall be planted only when the soil is moist and favorable to growth. No planting shall be done between October 1 and April 1 unless weather and soil conditions are considered favorable and permission is granted by the Engineer.

## PART 3 EXECUTION

### 3.01 SODDING

- A. The area to be sodded shall be constructed to the lines and grades indicated on the Drawings or as directed by the Engineer, and the surface loosened to a depth of not less than 3-inches with a rake or other device. If necessary, it shall be sprinkled until saturated at least 1-inch in depth and kept moist until the sod is place thereon. Immediately before placing the sod, the fertilizer shall be uniformly applied at the rate of 40 pounds of Grade 10-10-10, or equivalent, per 1,000 square feet. Agricultural limestone shall be applied based on soil tests or at a rate of 10 to 20 pounds per 1,000 square feet.
- B. The entire area shall be thoroughly covered with sod. The sod shall be placed on the prepared surface with the edges in close contact and, as far as possible, with staggered joints. If any gaps are present after placement, the contractor shall fill these areas with sand at no additional cost to the owner.
- C. The sod shall be maintained moist from time of removal until reset but shall be placed as soon as practicable after removal from place where growing. Immediately after placing it shall be rolled with a lightweight roller or hand tamped to the satisfaction of the Engineer.
- D. Sod on slopes steeper than 3 to 1 shall be held in place by wooden pins about 1-inch square and 6-inches long, driven through the sod into the soil until they are flush with the top of the sod.

### 3.02 WATERING AND MAINTENANCE

- A. The sod shall be watered as directed by the Engineer for a period of two weeks after which ammonium nitrate shall be applied at the rate of three pounds per 1,000 square feet and the sod given a final watering.
- B. The Contractor shall not allow any equipment or material to be placed on any planted area and shall erect suitable barricades and guards to prevent Contractor's equipment, labor or the public from traveling on or over any area planted with sod.
- C. It shall be the obligation of the Contractor to secure a satisfactory growth of grass before final acceptance of the Project.
- D. **The Contractor shall mow and maintain all sodded areas without additional payment until final acceptance of the work by the Owner, and any regrading, refertilizing, reliming, resodding or remulching shall be done at his own expense.** Sodding work shall be repeated on defective areas until a satisfactory uniform stand of sod is accomplished. **Damage resulting from erosion, gulleys, washouts, or other causes shall be repaired by filling with topsoil, compacting, and repeating the sodding work at the Contractor's expense.**

END OF SECTION

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## **SECTION 02930 TREES, SHRUBS AND GROUND COVERS**

### **PART 1 GENERAL**

#### **1.01 SCOPE**

This Section includes furnishing all equipment, materials and labor necessary for soil preparation, planting of trees, shrubs, ground cover or vines as applicable, protection, maintenance, warranty and replacement of plants and all related items as shown on the Drawings and specified herein.

#### **1.02 SUBSURFACE INVESTIGATION**

Before commencing any work required by this Section, the Contractor shall ascertain the location of all utilities, subsurface drainage and underground construction so that proper precautions may be taken not to disturb or damage any subsurface improvements. The Contractor will be held responsible for making, at Contractor's expense, all repairs to damaged utilities and structures resulting from the work.

#### **1.03 OBSTRUCTIONS BELOW GROUND OR OVERHEAD**

It is not contemplated that planting shall occur where the depth of soil over underground construction or obstructions is insufficient to accommodate the roots or where impervious soil will require drainage. Where such conditions are encountered in excavation of planting areas, other locations for underground construction or for the planting may be designated by the Engineer.

Removal of underground obstructions, relocation of construction and provision of drainage for planting areas shall be done only as directed by the Engineer.

If changes in the location of the work or if removal of obstructions involve additional work, the Contractor shall proceed in accordance with the General Conditions of the Contract Documents.

#### **1.04 QUALIFICATIONS**

All planting shall be performed by personnel familiar with planting procedure and under the supervision of a qualified planting foreman.

#### **1.05 EXISTING IMPROVEMENTS**

The Contractor shall take all necessary precautions to avoid damage to existing sidewalks, fencing, paving, curbs, lighting and other site improvements.

## **1.06 QUALITY ASSURANCE**

Size quality, root ball preparation and grading standards shall conform to the American Association of Nurserymen, Inc., as published in the "American Standard for Nursery Stock" ANSI 260.1, latest approved revision.

The Contractor shall obtain representative samples of topsoil to be used in planting operations and shall furnish soil analysis certificates to the Engineer for approval. Tests shall be performed by the State University Agricultural Extension Service or an approved independent testing laboratory; tests shall include pH, texture and organic matter analysis. One soil test per 100 cubic yards of topsoil is required.

The Contractor shall be responsible for all certificates of inspection of plant materials that may be required by federal, state or other authorities to accompany shipments of plants. All plants must be inspected and approved by the Engineer before they are planted. Inspection and approval of plants upon delivery shall be for quality, size and variety only and shall not in any way impair the right of rejection for failure to meet other requirements during progress of the Work.

Fertilizer shall conform to the local, state and federal laws applicable to its manufacture and labeling.

## **1.07 WARRANTY**

### **A. Warranty:**

Plant shall be alive, healthy and vigorous at the end of the warranty period. The warranty period shall terminate at the end of the first full growing season. The first full growing season begins on April 1 after planting and ends on November 1.

### **B. Replacement:**

The Contractor shall inspect all planting monthly until the end of the maintenance period, and shall submit to the Engineer a written report describing plant replacements, if any. Any plant required under this Contract that is dead or not in satisfactory growth will be removed from the site; these and any plants missing due to the Contractor's negligence shall be replaced as soon as conditions permit. In case of any question regarding the condition and satisfactory establishment of a rejected plant, the Contractor shall notify the Engineer immediately in writing, and the Engineer shall determine acceptability. All replacement plants shall be warranted for the duration of one full growing season as described above.

## **PART 2 PRODUCTS**

### **2.01 TOPSOIL**

The Contractor shall furnish, at no additional cost to the Owner, all necessary topsoil for the planting of trees, shrubs, vines, and/or ground covers. All topsoil shall be natural soil classifiable as a loam, silt loam or sandy loam as described in the U.S. Department of Agriculture triangular soil texture chart. The acidity range, between 6.0 and 6.5 pH, shall contain not less than three percent organic matter as determined by loss on ignition of moisture-free samples dried at 100 degrees C. Topsoil shall be free from hard clods, stiff clay, hardpan, stones larger than 1-inch in diameter, noxious weeds and plants, sod, partially disintegrated debris, insects or any other undesirable material that would be toxic or harmful to growth. Topsoil for planting may be conditioned by the use of approved additives until the requirements outlined in the paragraph are satisfied.

### **2.02 PEAT**

Peat shall be commercial Sphagnum peat moss containing not more than 15 percent moisture and not less than 60 percent decomposed organic matter by weight calculated on an oven-dried basis. It shall be clean, free from stones, sticks, roots and other foreign matter and shall be shredded. It shall be delivered to site in unopened, partially compressed bales.

### **2.03 SAND**

Sand for planting mix shall be clean, natural sand meeting the requirements of ASTM C 144. Sand may be prepared from stone, gravel or other inert material having similar characteristics subject to approval by the Engineer.

### **2.04 MANURE**

Manure shall be commercially composted horse or cow manure subject to approval by the Engineer.

### **2.05 LIMESTONE**

Limestone, if necessary as a soil additive shall be ground agricultural dolomitic limestone containing no less than 85 percent of total carbonates and shall be ground to such fineness that 50 percent will pass through a 100-mesh sieve and 90 percent through a 20 percent sieve.

### **2.06 PLANTING MIX**

- A. All planting pits shall be backfilled with a planting mix consisting of the following proportions by volume:
1. One part native soil.
  2. One part peat.

3. One part sand.
- B. The planting mix shall be thoroughly mixed prior to final placement. If so directed by the Engineer, ground limestone shall be added to the mix at a rate of 2-1/2 pounds per cubic yard for each full point rise in pH desired.

## **2.07 PLANTS**

- A. The names of plants required under this Contract conform to those given in "Standardized Plant Names," latest edition, prepared by the American Joint Committee on Horticultural Nomenclature.
- B. Plant specimens shall conform to those indicated on the Drawings.
- C. Plants shall be nursery grown and have a habit of growth that is normal for the species. They shall be sound, healthy, vigorous and free from insect pests, plant diseases and injuries. All plants shall equal or exceed the measurements specified in the Plant List, which are minimum acceptable sizes. They shall be measured before pruning with branches in normal position. No pruning shall be done until the plants have been inspected by the Engineer and in no case shall the plants supplied under this Contract be pruned back to such an extent that they no longer meet Specifications. Root bound container plants shall have their root balls scarified 1/2-inch deep along their length on two sides to cut the circling roots.
- D. Substitutions of genus, species or variety will be permitted only upon submission of proof, in writing, that the specified plant or its alternative is not obtainable in the continental United States. Written authorization for substitution must be obtained from the Engineer.
- E. Under special conditions plants may be filled collected if approved in writing by the Engineer.
- F. All plants (except ground-covers) in the Plant List shall be balled and burlapped or container grown unless noted otherwise. Balled and burlapped material shall be dug with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap and bound with twine, cord or wire mesh. Where necessary to prevent breaking or cracking of the ball during the process of planting, the ball may be secured to a platform.

## **2.08 MISCELLANEOUS MATERIALS**

- A. Water shall be suitable for irrigation and free from ingredients harmful to plant life. Hose and other watering equipment required for the work shall be furnished by the Contractor.
- B. Mulch, if applicable, shall be pure grade pulverized pine bark or pine straw.

- C. Fertilizer shall be slow release, resin-coated fertilizer having a chemical analysis of 19-6-12, equal to Osmocote.
- D. Materials for Staking, Guying and Wrapping:
  - 1. Stakes for supporting trees shall be 2-inches square x eight feet as shown on the Drawings. Stakes shall be rot resistant wood, e.g., redwood, oak, western cedar or pressure treated southern pine.
  - 2. Wire for fastening trees to stakes or eye-bolts shall be No. 12 gauge pliable, galvanized steel.
  - 3. Hose to encase guy wires or wires used for fastening shall be rubber garden hose.
  - 4. Wrapping material for deciduous tree trunks shall be treated heavy crepe paper or burlap in strips 6 to 10-inches wide.
- E. Turnbuckles shall have a 3-inch minimum lengthwise opening fitted with threaded ends and screw eyes. All parts shall be hot dipped galvanized steel or some other rust resistant material.
- F. If required on Drawings, metal or plastic flags shall be minimum 3 x 5-inches x 1/8-inch thick attached by running wire through punched holes on both ends. Position at waist height on each wire.

## **PART 3 EXECUTION**

### **3.01 TIME OF PLANTING**

- A. The Contractor shall be notified in writing by the Engineer when other sections of the Work have progressed sufficiently to commence work of planting. Planting operations shall be conducted immediately under favorable weather conditions. These seasons shall be as follows:
  - 1. Planting Season: Plant all trees, shrubs and ground covers between October 1 and April 1.
  - 2. At the option and the full responsibility of the Contractor, planting operations may be conducted under unseasonable conditions without additional compensation.

### **3.02 PRODUCT HANDLING AND STORAGE**

- A. Balled and burlapped plants shall be dug and prepared for shipment in a manner that will not damage roots or branches.
- B. Protection After Delivery: The balls or roots of plants not planted immediately on delivery shall be covered with moist soil or mulch, or other protection from drying winds and sun. All plants shall be watered as necessary, until planted. Balled plants shall be lifted by the truck of the plant.

### 3.03 PLANTING OF TREES, SHRUBS AND GROUND COVER

- A. Except as otherwise specified, the Contractor's work shall conform to accepted horticultural practices as used in the trade.
- B. The Engineer shall verify the staking of all plants with labeled stakes to be furnished for this purpose by the Contractor.
- C. Planting pits shall be dug and soil for planting ready before plants are delivered. Pits shall be excavated according to the dimensions indicated on the Drawings.
- D. Ground cover beds, if applicable, shall be prepared by thorough loosening of existing sub-grade and by placement of a minimum of 4-inches of approved topsoil to conform to the final grade.
- E. Excess excavated soil from planting operations shall be disposed of by the Contractor.
- F. All plants shall be set on prepared soil to such depth that the finished grade level at the plant after settlement will be the same as that at which the plant has grown. They shall be planted upright and plumb. No burlap shall be pulled out from under balls. Platforms, wire and burlap for top and sides of the ball shall be removed. All broken or frayed roots shall be cut off cleanly. Topsoil or prepared soil shall be placed and compacted carefully to avoid injury to roots and to fill voids. When the hole is nearly filled, add water as necessary and allow it to soak away. Fill the hole to finish grade. After the ground settles, additional soil shall be filled to the level of the finished grade.
- G. During the setting of plants, 20-10-5 slow release fertilizer tablets shall be positioned approximately halfway up the root system, evenly distributed around and adjacent to the root ball. The following shall apply:
  - 1. Small Ground Cover Plants: One 5-gram tablet per plant.
  - 2. Shrubs: Two 10-gram tablets for each one foot of height or spread.
  - 3. Trees: Two 21-gram tablets for each 1/2-inch of trunk diameter.
- H. If applicable, staking and guying shall be accomplished as shown on Drawings. Supports shall be kept in place during entire warranty period.
- I. Promptly after planting, trunks of all deciduous trees shall be wrapped spirally from the ground line to the height of the second branches. All wrapping shall be neat and snug and the material shall be held in place by brown unpolished jute twine.
- J. Unless shown otherwise on the Drawings, all plants shall be mulched with a 3-inch layer of pine straw within two days after planting. This mulch shall entirely cover the area of the planting pit, bed or saucer around each plant.

- K. If applicable, plant beds containing ericaceous plants shall be top dressed with ordinary powered sulfur at the rate of three pints per 100 square feet of area.

### **3.04 PRUNING AND REPAIR**

Upon completion of the Work under the Contract, all new trees and shrubs shall have pruned and any injuries repaired. The amount of pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of transplanting operations. Pruning shall be done in such a manner as not to change the natural habit or shape of the plant. All cuts shall be made at the branch collar. Flush cutting of branches shall be grounds for rejecting the tree. The Contractor shall remove the tree from the site and substitute another of the same species and quality. Errors in pruning resulting in tree replacement shall not entitle the Contractor to additional compensation. On all bruises or scars on the bark and cuts over 3/4-inch in diameter, the injured cambium shall be traced back to living tissue and removed; wounds shall be smoothed and shaped so as not to retain water.

### **3.05 INSPECTION FOR ACCEPTANCE**

Upon completion of all planting and after written notification, inspection of the landscape work to determine partial completion of the contract work, exclusive of maintenance and replacement of plants, will be made by the Engineer. Inspection of the work will be made again by the Engineer at the end of the maintenance period.

### **3.06 MAINTENANCE**

Maintenance shall begin immediately after each plant is planted and shall continue until all plants are accepted. Planting shall be protected and maintained by watering, fertilizing and replanting as necessary for the least one full growing season beginning April 1 and ending November 1.

**END OF SECTION**

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## **SECTION 03100 CONCRETE FORMS AND ACCESSORIES**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Form Accessories.
- C. Expansion and Contraction Joints with Accessories.
- D. Water Stops

#### **1.02 RELATED SECTIONS**

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

#### **1.03 REFERENCES**

- A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
- B. ACI 318 - Building Code Requirements for Reinforced Concrete and Commentary; American Concrete Institute International.
- C. ACI 347R - Guide to Formwork for Concrete; American Concrete Institute International.
- D. ACI350R – Environmental engineering Concrete Structures; American Concrete institute International.
- E. ASME A17.1 - Safety Code for Elevators and Escalators; The American Society of Mechanical Engineers.
- F. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology (Department of Commerce).
- G. AHA A135.4 Basic Hardboard
- H. ASTM A 1011/A 1011M Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High Strength Low-Alloy and High-Strength Low-Alloy With Improved Formability

- I. ASTM A 109/A 109M Steel, Strip, Carbon (0.25 Maximum Percent), Cold-Rolled
- J. ASTM A 167 Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
- K. ASTM A 480/A 480M General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
- L. ASTM C 919 Use of Sealants in Acoustical Applications
- M. ASTM C 920 Elastomeric Joint Sealants
- N. ASTM D 1751 Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
- O. ASTM D 1752 Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
- P. ASTM D 2628 Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements
- Q. ASTM D 2835 Lubricant for Installation of Preformed Compression Seals in Concrete Pavements
- R. ASTM D 4 Bitumen Content
- S. ASTM D 412 Vulcanized Rubber and Thermoplastic Elastomers – Tension
- T. ASTM D 471 Rubber Property - Effect of Liquids
- U. ASTM D 5249 Backer Material for Use with Cold-and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
- V. ASTM D 5329 Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements
- W. COE CRD-C 513 Specifications for Rubber Waterstops
- X. COE CRD-C 572 Specifications for Polyvinylchloride Waterstops

#### **1.04 DESIGN REQUIREMENTS**

Formwork shall be designed in accordance with methodology of ACI 347 for anticipated loads, lateral pressures, and stresses. Forms shall be capable of producing a surface, which meets the requirements of the class of finish specified in Section 03305 CAST-IN-PLACE CONCRETE. Forms shall be capable of withstanding the pressures resulting from placement and vibration of concrete.

## **1.05 SUBMITTALS**

- A. See Section 01330 - Submittals
- B. Formwork - Drawings showing details of formwork, including dimensions of panel joints, supports, studding and shoring, and sequence of form and shoring removal. Manufacturers recommendation on method and rate of application of form release agents.
- C. Samples of form ties and method of sealing form tie hole from transmission of water in hydraulic structures.
- D. Construction and Control Joints: Layout and location for each type.
- E. Manufacturer's literature, including safety data sheets, for preformed fillers and the lubricants used in their installation; field-molded sealants and primers (when required by sealant manufacturer); preformed compression seals and preformed control joints.
- F. Water Stops - Details of splices, method of securing and supporting water stop in forms to maintain proper orientation and location during concrete placement.
- G. Samples of all proposed waterstops this includes both PVC and hydrophilic waterstops

## **1.06 QUALITY ASSURANCE**

Design formwork under direct supervision of a Professional Structural Engineer experienced in design of concrete formwork and licensed in the State of Georgia.

## **1.07 DELIVERY, STORAGE, AND HANDLING**

Material delivered and placed in storage shall be stored off the ground and protected from moisture, dirt, and other contaminants. Sealants shall be delivered in the manufacturer's original unopened containers. Sealants whose shelf life has expired shall be removed from the site.

# **PART 2 PRODUCTS**

## **2.01 WOOD FORM MATERIALS**

- A. Form Materials: At the discretion of the Contractor.
- B. Softwood Plywood: PS 1, C Grade, Group 2.
- C. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I.
- D. Plywood: Douglas Fir species; solid one side grade; sound undamaged sheets

with clean, true edges.

- E. Lumber: Straight, dressed on all sides, uniform width and thickness, free from knots, offsets, holes, dents, and other surface defects; with grade stamp clearly visible.

## **2.02 PREFABRICATED FORMS**

- A. Manufacturers:
  - 1. Alabama Metal Industries Corporation; [www.amico-online.com](http://www.amico-online.com).
  - 2. Molded Fiber Glass Concrete Forms Co.
  - 3. Reward Wall Systems.
  - 4. SureVoid Products, Inc.
  - 5. Substitutions: See Section 01600 - Product requirements.
- B. Preformed Steel Forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- C. Preformed Plastic Forms: Thermoplastic polystyrene form liner, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- D. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.
- E. Pan Type: Steel, of size and profile indicated.
- F. Tubular Column Type: Round, spirally wound laminated fiber material, surface treated with release agent, non-reusable, of sizes indicated.
- G. Void Forms: Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set; 2 inches (50 mm) thick.

## **2.03 FORMWORK ACCESSORIES**

- A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, 7/8 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Water Stop Ties: For water-holding structures, basements, pipe galleries, and accessible spaces below finish grade, furnish one of the following:
  - 1. Integral steel water stop 0.103-inch thick and 0.625 inch in diameter tightly and continuously welded to tie.

2. Neoprene water stop 3/16-inch thick and 15/16 inch in diameter whose center hole is 1/2-diameter of tie, or molded plastic water stop of comparable size.
  3. Orient water stop perpendicular to tie and symmetrical about center of tie.
  4. Design ties to prevent rotation or disturbance of center portion of tie during removal of ends and to prevent water leaking along tie.
- C. Form Release Agent: Material: Release agent shall not bond with, stain, or adversely affect concrete surfaces, and shall not impair subsequent treatment of concrete surfaces when applied to forms. A ready-to-use water based material formulated to reduce or eliminate surface imperfections, containing no mineral oil or organic solvents. Environmentally safe, meeting local, state, and federal regulation and can be used in potable water facilities.
- D. Corners: Filleted, rigid plastic type; 1 x 1 inch size; maximum possible lengths.
- E. Dovetail Anchor Slot: Galvanized steel, 22 gauge thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- F. Flashing Reglets: Galvanized steel, 22 gauge thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- G. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

## **2.04 CONTRACTION JOINT STRIPS**

Contraction joint strips shall be 1/8 inch thick tempered hardboard conforming to AHA A135.4, Class 1. In lieu of hardboard strips, rigid polyvinylchloride (PVC) or high impact polystyrene (HIPS) insert strips specifically designed to induce controlled cracking in slabs on grade may be used. Such insert strips shall have removable top section.

## **2.05 PREFORMED EXPANSION JOINT FILLER**

Expansion joint filler shall be preformed material conforming to ASTM D 1751 or ASTM D 1752. Unless otherwise indicated, filler material shall be 10 mm 3/8 inch thick and of a width applicable for the joint formed. Backer material, when required, shall conform to ASTM D 5249.

## **2.06 SEALANT**

- A. Preformed Polychloroprene Elastomeric Type ASTM D 2628.
- B. Lubricant for Preformed Compression Seals ASTM D 2835.
- C. Field-Molded Type ASTM C 920, Type M, Grade P or NS, Class 25, Use [T] [NT] for horizontal joints. Type M, Grade NS, Class 25, Use NT for vertical

joints. Bond breaker material shall be polyethylene tape, coated paper, metal foil or similar type materials. The back-up material shall be compressible, non-shrink, nonreactive with sealant, and non-absorptive material type such as extruded butyl or polychloroprene rubber.

## 2.07 PVC WATERSTOPS FOR EXPANSION JOINTS

- A. Provide flexible PVC (polyvinyl chloride) waterstop as manufactured by Greenstreak, profile style number 732, or approved equal. This profile has a length of 6", a thickness of 3/8" a bulb diameter of 7/8", and rib dimension of 5/8".
- B. The PVC waterstop shall be extruded from an elastomeric plastic material of which the basic resin is prime virgin polyvinyl chloride. The PVC compound shall not contain any scrapped or reclaimed material or pigment whatsoever.
- C. Performance Requirements as follows:

Property	Test Method	Required Limits
Water absorption	ASTM D 570	0.15% max
Tear Resistance	ASTM D 624	200 lb/in (35 kN/m) min.
Ultimate Elongation	ASTM D 638	350% min.
Tensile Strength	ASTM D 638	2000 psi (13.78 Mpa) min.
Low Temperature Brittleness	ASTM D 746	No Failure @ -35° F (-37° C)
Stiffness in Flexure	ASTM D 747	600 psi (4.13 Mpa) min.
Specific Gravity	ASTM D 792	1.45 max.
Hardness, Shore A	ASTM D 2240	79 +3
Tensile Strength after accelerated extraction	CRD-C 572	1850 psi (11.03 Mpa) min.
Elongation after accelerated extraction	CRD-C 572	300% min.
Effect of Alkalies after 7 days: Weight Change Hardness Change	CRD-C 572	between -0.10% / +0.25% +/- 5 points

## 2.08 HYDROPHILIC WATERSTOP FOR NON-MOVING CONTRACTION AND CONSTRUCTION JOINTS

- A. Provide hydrophilic rubber waterstop as supplied by Greenstreak, HYDROTITE profile style number CJ-0725-3KAD or approved equal. This profile has a width of 0.98" and a height of 0.28".
- B. The waterstop shall be a combination of chloroprene rubber and chloroprene rubber modified to impart hydrophilic properties.

- C. The waterstop shall have a delay coating to inhibit initial expansion due to moisture present in fresh concrete.
- D. Performance Requirements as follows:

**Chloroprene Rubber**

Property	Test Method	Required Limits
Tensile Strength	ASTM D 412	1300 PSI min.
Ultimate Elongation	ASTM D 412	400% min.
Hardness (Shore A)	ASTM D 2240	50 +/- 5
Tear Resistance	ASTM D 624	100 lb/inch min.

**Modified Chloroprene (Hydrophilic) Rubber**

Property	Test Method	Required Limits
Tensile Strength	ASTM D 412	350 PSI min.
Ultimate Elongation	ASTM D 412	600% min.
Hardness (Shore A)	ASTM D 2240	52 +/- 5
Tear Resistance	ASTM D 624	50 lb/inch
Expansion Ratio	Volumetric Change - Distilled Water @ 70° F	3 to 1 min.

**2.09 WATERSTOP ACCESSORIES**

- A. PVC Waterstops
  - 1. Provide factory made waterstop fabrications for all changes of direction, intersections, and transitions leaving only straight butt joint splices for the field.
  - 2. Provide hog rings or grommets spaced at 12 inches on center along length of waterstop.
  - 3. Provide Teflon coated thermostatically controlled waterstop splicing irons for field butt splices.
- B. Hydrophilic Waterstops
  - 1. Provide Greenstreak 7300 two component epoxy gel to secure HYDROTITE to rough, wet (or dry) concrete.
  - 2. Provide LEAKMASTER single component hydrophilic sealant to secure HYDROTITE to rough, dry concrete.
  - 3. Provide cyanacrylate adhesive (super glue) for all splices.

## **PART 3 EXECUTION**

### **3.01 ERECTION - FORMWORK**

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members that are not indicated on drawings.
- F. Provide fillet strips on external corners of beams, joists, columns, and walls. Fillet strips shall be placed in the forms.
- G. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- H. Coordinate this section with other sections of work that require attachment of components to formwork.
- I. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from the Engineer before proceeding.

### **3.02 APPLICATION - FORM RELEASE AGENT**

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

### **3.03 INSERTS, EMBEDDED PARTS, AND OPENINGS**

- A. Provide formed openings where required for items to be embedded in passing through concrete work.

- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Position recessed anchor slots for brick veneer masonry anchors to spacing and intervals specified in Section 04080.
- E. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- F. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement. Heat seal joints so they are watertight.
- G. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- H. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

### **3.04 FORM CLEANING**

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

### **3.05 FORMWORK TOLERANCES**

- A. Construct formwork to maintain tolerances required by ACI 301.
- B. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.
- C. Camber slabs and beams 1/4 inch per 10 feet.
- D. Camber slabs and beams in accordance with ACI 301.

### **3.06 FIELD AND QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified in Section 01450.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.
- C. Do not reuse wood formwork more than three (3) times for concrete surfaces to be exposed to view. Do not patch formwork.

### **3.07 FORM REMOVAL**

Forms shall be removed preventing injury to the concrete and ensuring the complete safety of the structure. Formwork for columns, walls, side of beams and other parts not supporting the weight of concrete may be removed when the concrete has attained sufficient strength to resist damage from the removal operation but not before at least 24 hours has elapsed since concrete placement. Supporting forms and shores shall not be removed from beams, floors and walls until the structural units are strong enough to carry their own weight and any other construction or natural loads. Supporting forms or shores shall not be removed before the concrete strength has reached 70 percent of design strength, as determined by field cured cylinders or other approved methods. Job-cured test specimens shall demonstrate this strength, and by a structural analysis considering the proposed loads in relation to these test strengths and the strength of forming and shoring system. The job-cured test specimens for form removal purposes shall be provided in numbers as directed and shall be in addition to those required for concrete quality control. The specimens shall be removed from molds at the age of 24 hours and shall receive, insofar as possible, the same curing and protection as the structures they represent.

### **3.08 CONTRACTION JOINTS**

Contraction joints may be constructed by inserting tempered hardboard strips or rigid PVC or HIPS insert strips into the plastic concrete using a steel parting bar, when necessary, or by cutting the concrete with a saw after concrete has set. Joints shall be approximately 1/8 inch wide and shall extend into the slab one-fourth the slab thickness, minimum, but not less than 1 inch.

### **3.09 JOINT STRIPS**

Strips shall be of the required dimensions and as long as practicable.

After the first floating, the concrete shall be grooved with a tool at the joint locations. The strips shall be inserted in the groove and depressed until the top edge of the vertical surface is flush with the surface of the slab. The slab shall be floated and finished as specified. Working of the concrete adjacent to the joint shall be the minimum necessary to fill voids and consolidate the concrete. Where indicated, the top portion of the strip shall be sawed out after the curing period to form a recess for sealer. The removable section of PVC or HIPS strips shall be discarded and the insert left in place. True

alignment of the strips shall be maintained during insertion.

### **3.10 SAWED JOINTS**

Joint sawing shall be early enough to prevent uncontrolled cracking in the slab, but late enough that this can be accomplished without appreciable spalling. Concrete sawing machines shall be adequate in number and power, and with sufficient replacement blades to complete the sawing at the required rate. Joints shall be cut to true alignment and shall be cut in sequence of concrete placement. Sludge and cutting debris shall be removed.

### **3.11 EXPANSION JOINTS**

Preformed expansion joint filler shall be used in expansion and isolation joints in slabs around columns and between slabs on grade and vertical surfaces where indicated. The filler shall extend the full slab depth, unless otherwise indicated. The edges of the joint shall be neatly finished with an edging tool of 1/8 inch radius, except where a resilient floor surface will be applied. Where the joint is to receive a sealant, the filler strips shall be installed at the proper level below the finished floor with a slightly tapered, dressed and oiled wood strip temporarily secured to the top to form a recess to the size shown on the drawings. The wood strip shall be removed after the concrete has set. Contractor may opt to use a removable expansion filler cap designed and fabricated for this purpose in lieu of the wood strip. The groove shall be thoroughly cleaned of laitance, curing compound, foreign materials, protrusions of hardened concrete, and any dust, which shall be blown out of the groove with oil-free compressed air.

### **3.12 JOINT SEALANT**

Sawed contraction joints and expansion joints in slabs shall be filled with joint sealant, unless otherwise shown. Joint surfaces shall be clean, dry, and free of oil or other foreign material, which would adversely affect the bond between sealant and concrete. Joint sealant shall be applied as recommended by the manufacturer of the sealant.

### **3.13 JOINTS WITH PREFORMED COMPRESSION SEALS**

Compression seals shall be installed with equipment capable of installing joint seals to the prescribed depth without cutting, nicking, twisting, or otherwise distorting or damaging the seal or concrete and with no more than 5 percent stretching of the seal. The sides of the joint and, if necessary, the sides of the compression seal shall be covered with a coating of lubricant. Butt joints shall be coated with liberal applications of lubricant.

### **3.14 JOINTS WITH FIELD-MOLDED SEALANT**

Joints shall not be sealed when the sealant material, ambient air, or concrete temperature is less than 4 degrees C 40 degrees F. When the sealants are meant to reduce the sound transmission characteristics of interior walls, ceilings, and floors the guidance provided in ASTM C 919 shall be followed. Joints requiring a bond breaker shall be coated with curing compound or with bituminous paint. Bond breaker and back-up material shall be installed where required. Joints shall be primed and filled flush with joint sealant in accordance with the manufacturer's Recommendations.

### **3.15 WATERSTOP INSTALLATION**

#### **A. PVC Waterstop**

1. Field butt splices shall be heat fused welded using a Teflon covered thermostatically controlled waterstop splicing iron at approximately 380 degrees F. Follow approved manufacturer recommendations.
2. Lapping of waterstop, use of adhesives, or solvents shall not be allowed.
3. Center waterstop in joint and secure waterstop in correct position using hog rings or grommets spaced at 12" on centers along the length of the waterstop and wire tie to adjacent reinforcing steel.

#### **B. Hydrophilic Waterstop**

1. Cut coil ends square (or at proper angle for mitered corners) with shears or sharp blade to fit splices together without overlaps.
2. Splices shall be sealed using cyanacrylate adhesive (super glue) and LEAKMASTER (LEAKMASTER is optional).
3. Seal watertight any exposed cells of HYDROTITE using LEAKMASTER.
4. Follow approved manufacturer recommendations.

#### **C. Hydrophilic and PVC Intersections**

1. Maintain continuity of waterstops at all intersections and transitions.
2. Joinery between PVC and HYDROTITE shall be sealed using LEAKMASTER.
3. Follow approved manufacturer recommendations.

**END OF SECTION**

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## **SECTION 03200 CONCRETE REINFORCEMENT**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

#### **1.02 RELATED SECTIONS**

- A. Section 03100 - Concrete Forms and Accessories.
- B. Section 03305 - Cast-In-Place Concrete.

#### **1.03 REFERENCES**

- A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
- B. ACI 318 - Building Code Requirements For Reinforced Concrete and Commentary; American Concrete Institute International.
- C. ACI 350R – Environmental Engineering Concrete Structures; American Concrete Institute International.
- D. ACI SP-66 - ACI Detailing Manual; American Concrete Institute International.
- E. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- F. ASTM A 184/A 184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
- G. ASTM A 185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
- H. ASTM A 497 - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
- I. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- J. ASTM A 641/A 641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

- K. ASTM A 704/A 704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
- L. ASTM A 706/A 706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
- M. ASTM A 767/A 767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- N. ASTM A 775/A 775M - Standard Specification for Epoxy-Coated Reinforcing Steel Bars
- O. ASTM A 884/A 884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement.
- P. ASTM A 996/A 996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.
- Q. ASTM D 3963/D 3963M - Standard Specification for Fabrication and Job-Site Handling of Epoxy Coated Reinforcing Steel Bars.
- R. AWS D1.4 - Structural Welding Code - Reinforcing Steel; American Welding Society.
- S. CRSI (DA4) - Manual of Standard Practice; Concrete Reinforcing Steel Institute.
- T. CRSI (P1) - Placing Reinforcing Bars; Concrete Reinforcing Steel Institute.

#### **1.04 SUBMITTALS**

- A. See Section 01330 - Submittals, for submittal procedures.
- B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
  - 1. Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in the State of Georgia.
- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- D. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

#### **1.05 QUALITY ASSURANCE**

- A. Perform work of this section in accordance with ACI 301.
  - 1. Maintain one copy of each document on project site.

- B. Provide with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.
- C. Welders' Certificates: Submit certifications for welders employed on the project, verifying AWS qualification within the previous 12 months.

## **1.06 DELIVERY AND STORAGE**

Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports.

## **PART 2 PRODUCTS**

### **2.01 REINFORCEMENTS**

- A. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420).
  - 1. Plain billet-steel bars.
  - 2. Unfinished.
  - 3. Shop fabricated and bent cold.
- B. Reinforcing Steel Mat: ASTM A 704/A 704M, using ASTM A 615/A 615M Grade 40 (300) steel bars or rods, unfinished.
- C. Stirrup Steel: ASTM A 82 steel wire, unfinished.
- D. Welded Steel Wire Fabric: ASTM A 185.
  - 1. Flat Sheets.
  - 2. Mesh Size and Wire Gage: As indicated on drawings.
  - 3. Minimum Lap shall be 8".
- E. Synthetic Fiber Reinforcement

Synthetic fiber shall be polypropylene with a denier less than 100 and a nominal fiber length of 50 mm 2 inches.
- F. Reinforcement Accessories:
  - 1. Tie Wire: Annealed, minimum 16 gage (1.5 mm).
  - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
  - 3. Provide stainless steel components for placement within 1-1/2 inches (38 mm) of weathering surfaces.

## **2.02 DEVELOPMENT AND SPLICES**

- A. Conform to ACI 318, Chapter 12, and ACI 350R.
- B. Development 38 bar diameters, minimum.
- C. Class B splices 48 bar diameters, minimum.
- D. Welded wire fabric lap 8 inches, minimum.

## **2.03 FABRICATION**

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is not permitted.
- C. Welding of reinforcement is permitted only with the specific approval of the Engineer. Perform welding in accordance with AWS D1.4.
  - 1. Galvanized Reinforcement: Clean surfaces, weld and re-protect welded joint in accordance with CRSI (DA4).
- D. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D 3963/D 3963M.
- E. Locate reinforcing splices not indicated on drawings at point of minimum stress, if feasible.
  - 1. Review locations of splices with the Structural Engineer.

# **PART 3 EXECUTION**

## **3.01 INSTALLATION**

- A. Placing
  - 1. General: Reinforcing steel shall be placed in accordance with the drawings and reviewed shop drawings and the applicable requirements of the "Codes and Standards" hereinbefore specified. Install reinforcement accurately and secure against movement, particularly under the weight of workmen and the placement of concrete.
  - 2. Reinforcing Supports: Bars shall be supported on metal chairs or spacers on metal hangers, accurately placed and securely fastened to hold reinforcement in place. Additional bars shall be supplied whether specifically indicated on the drawings or not where necessary to securely fasten reinforcement in place. Support legs of accessories in forms without

embedding in form surface. Spacing of chairs and accessories shall conform with CRSI'S "Manual of Standard Practice." Hooping and stirrups shall be accurately spaced and wired to the reinforcing. No wood will be permitted inside forms. Where the concrete surface will be exposed to the weather in the finished structure, the portions of all accessories within 1/2 inch of the concrete surface shall be noncorrosive or protected against corrosion.

- B. Slab reinforcing supports: All slab reinforcement shall be supported on approved continuous slab bolsters. To prevent feet penetration into subgrade or formwork, slab bolsters shall have a continuous base. For slabs over insulation, slab bolsters shall have a continuous plate base. Spacing of bolsters shall not exceed 4'-0" on center.
- C. Placing and Tying: All reinforcing shall be set in place, spaced, and rigidly and securely tied or wired with 16 gauge steel tie wire at all splices and at sufficient points to hold the reinforcing in its proper position. Rebending of bars on the job to fit existing conditions will not be permitted without the written approval of the Engineer. Point ends of wire ties away from forms.
- D. Spacing: Minimum center to center distance between parallel bars shall be in accordance with the details on the drawings or, where not indicated, the clear spacing shall be 2 times the bar diameter but in no case less than 1-1/2 inches nor less than 1-1/3 times the maximum size aggregate.
- E. Splices:
  - 1. Laps of splices, where indicated on the drawings, shall be adequate to transfer stress by bond.
  - 2. Unless indicated otherwise on the drawings, lap bars according to ACI 318, Class B. Lap bars in masonry in accord with ACI 530, with a minimum of 48 diameters.
  - 3. Wherever possible, splices of adjacent bars shall be staggered.
  - 4. All splices not indicated shall be subject to acceptance by the Engineer.
  - 5. Mechanical connections for reinforcing bars may be used subject to acceptance by the Engineer.
  - 6. Welded wire fabric shall be overlapped wherever successive mats are continuous in such a way that the overlap measured between outermost cross wires of each fabric sheet is not less than the spacing of the cross wires plus 2 inches.
- F. Welded Wire Fabric: Wire fabric shall be in as long lengths as practicable and shall be wired at all laps and splices. End laps shall be off-set in adjacent widths. Welded wire fabric shall be supported with approved slab bolsters and as required for slab reinforcing supports.
- G. Dowel aligners: Dowel aligner shall be installed in accordance with manufacturer's recommendations.

- H. Dowels: Dowels shall be tied securely in place before concrete is deposited. In the event there are no bars in position to which dowels may be tied, a #3 bar minimum shall be added to provide proper support and anchorage. Bending of dowels after placement of concrete will not be permitted. Templates shall be furnished for all column and pier dowels.
- I. Protective Concrete Covering: Except where indicated otherwise on drawings, the minimum concrete coverage for steel reinforcement shall be as follows:
1. Concrete cast against and permanently exposed to earth: 3 inches.
  2. Formed concrete exposed to weather or earth: 1-1/2 inches for bars No. 5 and smaller, and 2 inches for bars over No. 5 in size.
  3. Concrete not exposed to weather or in contact with ground:
    - a. Slabs, walls, joists: 3/4 inches for bars No. 11 and smaller and 1-1/2 inches for bars over No. 11 in size.
    - b. Beams, columns: Primary reinforcement, ties, stirrups, spiral : 1-1/2 inches.
- J. Placing Tolerances: Bars shall be placed to the following tolerances:
1. Clear distance to formed surfaces:  $\pm 1/4$  inches.
  2. Minimum spacing between bars:  $\pm 1/4$  inch.
  3. Top bars in slabs and beams:
    - a. Members 8 inches deep or less:  $\pm 1/4$  inch.
    - b. Members more than 8 inches but not over 2 feet deep:  $\pm 1/2$  inches.
    - c. Members more than 2 feet deep:  $\pm 1$  inch.
  4. Crosswise of members: Spaced evenly within 2 inches.
  5. Lengthwise of members.  $\pm 2$  inches.
- K. Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be subject to acceptance by the Engineer.
- L. Cleaning: Reinforcement, at time concrete is placed, shall be free of all coatings that would impair bond to concrete.

### **3.02 FIELD QUALITY CONTROL**

A. Notification

1. Subcontractor shall notify the Engineer, Building Department and Testing Laboratory at least 48 hours ahead of each concrete pour, and no concrete shall be placed until all reinforcing steel has been installed by the Subcontractor and approved by the Engineer or Testing Laboratory.

B. Correction During Concreting

1. Capable steel workmen shall be kept on the work at all times during the placing of concrete and shall properly reset any reinforcement displaced by runways, workmen, or other causes.

C. Defective Work

1. The following reinforcing steel work will be considered defective and may be ordered by the Engineer to be removed and replaced by the Subcontractor at no additional cost to the Builder or Owner.
  - a. Bars with kinks or bends not shown on Drawings.
  - b. Bars injured due to bending or straightening.
  - c. Bars heated for bending.
  - d. Reinforcement not placed in accordance with the Drawings and/or Specifications.

**END OF SECTION**

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## **SECTION 03305 CAST-IN-PLACE CONCRETE**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Concrete formwork.
- B. Concrete building frame members.
- C. Concrete for composite floor construction.
- D. Elevated concrete slabs.
- E. Floors and slabs on grade.
- F. Concrete shear walls, elevator shaft walls, and foundation walls.
- G. Concrete foundations and anchor bolts for pre-engineered building.
- H. Concrete foundations for water storage tank(s).
- I. Concrete reinforcement.
- J. Joint devices associated with concrete work.
- K. Miscellaneous concrete elements, including equipment pads, light pole bases, flagpole bases, thrust blocks, and manholes.
- L. Concrete curing.

#### **1.02 REFERENCES**

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International.
- B. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; American Concrete Institute International.
- C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.

- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International.
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International.
- F. ACI 305R - Hot Weather Concreting; American Concrete Institute International.
- G. ACI 306R - Cold Weather Concreting; American Concrete Institute International.
- H. ACI 308 - Standard Practice for Curing Concrete; American Concrete Institute International.
- I. ACI 318 - Building Code Requirements for Reinforced Concrete and Commentary; American Concrete Institute International.
- J. ACI 308R - Environmental Engineering Concrete Structures; American Concrete Institute International.
- K. ASTM A 185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
- L. ASTM A 497 - Standard Specification for Steel Welded Wire fabric, Deformed, for Concrete Reinforcement.
- M. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- N. ASTM A 767/A 767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- O. ASTM A 775/A 775M - Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
- P. ASTM A 884/A 884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement.
- Q. ASTM C 33 - Standard Specification for Concrete Aggregates.
- R. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- S. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete.
- T. ASTM C 150 - Standard Specification for Portland Cement.
- U. ASTM C 171 - Standard Specification for Sheet Materials for Curing Concrete.

- V. ASTM C 173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- W. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
- X. ASTM C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- Y. ASTM C 330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
- Z. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete;.
- AA. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
- AB. ASTM C 685 - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
- AC. ASTM C 881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
- AD. ASTM C 1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete.
- AE. ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- AF. ASTM D 994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
- AG. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- AH. ASTM D 3963/D 3963M - Standard Specification for Fabrication and Job-Site Handling of Epoxy Coated Reinforcing Steel Bars.
- AI. ASTM E 1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers.

### **1.03 SUBMITTALS**

- A. See Section 01330 - Submittals, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products.

- C. Samples: Submit two, 12 inch long samples of waterstops and construction joint devices.
- D. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction for concrete accessories.
- E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

#### **1.04 QUALITY ASSURANCE**

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
  - 1. Maintain one copy of each document on site.
- B. Acquire cement from same source and aggregate from same source for entire project.
- C. Follow recommendations of ACI 305R when concreting during hot weather.
- D. Follow recommendations of ACI 306R when concreting during cold weather.

## **PART 2 PRODUCTS**

### **2.01 FORMWORK**

- A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
  - 1. Form Facing for Exposed Finish Concrete: Contractors choice of materials that will provide smooth, stain-free final appearance.
  - 2. Form Facing for Exposed Finish Concrete: Steel.
  - 3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
  - 4. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface. Form ties shall contain a water stop washer.

### **2.02 REINFORCEMENT**

- A. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420).
  - 1. Deformed billet-steel bars.
  - 2. Unfinished.
  - 3. Galvanized in accordance with ASTM A 767/A 767M, Class I.
  - 4. Epoxy coated in accordance with ASTM A 775/A 775M.

- B. Welded Steel Wire Fabric: ASTM A 185, plain type.
  - 1. Coiled Rolls.
  - 2. Mesh Size and Wire Gage: As indicated on drawings.
- C. Reinforcement Accessories:
  - 1. Tie Wire: Annealed, minimum 16 gage (1.5 mm).
  - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
  - 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches (38 mm) of weathering surfaces.

### **2.03 CONCRETE MATERIALS**

- A. Cement: ASTM C 150, Type I, II or III - Normal Portland type.
- B. Fine and Coarse Aggregates: ASTM C 33.
- C. Lightweight Aggregate: ASTM C 330.
- D. Fly Ash: ASTM C 618, Class C or F.
- E. Calcined Pozzolan: ASTM C 618, Class N.
- F. Silica Fume: ACI 211.1
- G. Water: Clean and not detrimental to concrete.
- H. Fiber Reinforcement: Synthetic fiber shown to have long-term resistance to deterioration when exposed to moisture and alkalis; 1/2 inch (12 mm) length.

### **2.04 ADMIXTURES**

- A. Air Entrainment Admixture: ASTM C 260
- B. Chemical Admixtures: ASTM C 494/C 494M, Type A - Water Reducing, Type C - Accelerating, and Type G - Water Reducing, High Range and Retarding.
  - 1. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

### **2.05 CONCRETE ACCESSORIES**

- A. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.
- B. Bonding Agent: ASTM C 1059, Type II acrylic non-redispersable type.
- C. Epoxy Bonding System: ASTM C 881, type as required by project conditions.

- D. Vapor Barrier: 6 mil thick clear polyethylene film, type recommended for below grade application.
- E. Chemical Hardener: Fluosilicate solution designed for densification of cured concrete slabs.
- F. Non-Shrink Grout: ASTM C 1107; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
  - 1. Minimum Compressive Strength at 48 Hours: 2,400 psi (17 MPa).
  - 2. Minimum Compressive Strength at 28 Days: 7,000 psi (48 MPa).
- G. Curing Materials: Comply with requirements of AC1308.
- H. Moisture-Retaining Cover: ASTM C 171; regular curing paper, white curing paper, clear polyethylene, white polyethylene, or white burlap-polyethylene sheet.
- I. Liquid Curing Compound: ASTM C 309, Type 1, clear or translucent, non-staining.

## **2.06 JOINT DEVICES AND MATERIALS**

- A. Waterstops: PVC, bulb-type, 6 inches minimum width, 3/8" nominal thickness, continuous.
  - 1. Lapped joints are not permitted.
  - 2. Product: Greenstreak 705.
  - 3. Alternative waterstop system: modified chloroprene rubber hydrophilic waterstop. Product greenstreak CJ-0725-3K.
- B. Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D 1751, 1/4 inch thick and 4 inches deep; tongue and groove profile.
- C. Joint Filler: Compressible asphalt mastic with felt facers, complying with ASTM D 994, 1/4 inch thick and 4 inches deep.
- D. Construction Joint Devices: Integral galvanized steel, formed to tongue and groove profile, with removable top strip exposing sealant trough, knockout holes spaced at 6 inches, ribbed steel spikes with tongue to fit top screed edge.

## **2.07 CONCRETE MIX DESIGN**

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.

1. For trial mixtures method, employ independent testing agency acceptable to for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
- D. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard (0.89 kg per cubic meter), or as recommended by manufacturer for specific project conditions.
- E. Normal Weight Concrete:
1. Compressive Strength, when tested in accordance with ASTM C 39/C 39M at 28 days: 4000 psi.
  2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
  3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
  4. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
  5. Cement Content: Minimum 611 lb per cubic yard.
  6. Water-Cement Ratio: Maximum 48 percent by weight.
  7. Total Air Content: 4.5% +/-1.5%, per ASTM C 173.
  8. Maximum Slump: 4 inches.
  9. Maximum Aggregate Size: 1-1/2 inch.

## 2.08 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C 685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C 94/C 94M.

## 2.09 CONCRETE PROPERTIES FOR APPLICABLE COMPRESSIVE STRENGTHS

<u>28 Day Compressive Strength (fc, psi)</u>	<u>Maximum Water-Cement Ratio By Weight (lb/lb)</u>	<u>Minimum Cement Content (lbs/cubic yard)</u>	<b>LOCATION</b>
5000	0.40	658	Prestressed Members.
4000	0.45*	611	Structural Items, Parking Area Pavement & Driveways, Sidewalks and Curb & Gutter.
3000	0.55	517	Concrete Fill

\*The optimum water-cement ratio for mix designs in excess of 4000 psi 28 day compressive strength shall be determined by various mix designs but not to exceed 0.48.

## **2.10 SLUMP LIMITS**

- A. Concrete, when placed, shall have a slump within the following limits as measured in accordance with ASTM C143:
- |    |                                       |       |
|----|---------------------------------------|-------|
| 1. | Walls, beams, columns                 | 1"-3" |
| 2. | Footings, caissons                    | 2"-4" |
| 3. | Pavement, slabs, driveways, sidewalks | 2"-4" |

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

Verify lines, levels, and dimensions before proceeding with work of this section.

### **3.02 PREPARATION**

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.
- D. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- E. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- F. Install vapor barrier under interior slabs on grade. Lap joints minimum 6 inches (150 mm) and seal watertight by taping edges and ends. Cover with sand to depth shown on drawings.

### **3.03 INSTALLATION (OF REINFORCEMENTS)**

- A. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D 3963/D 3963M.
- B. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

- C. Install wire fabric in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
- D. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

### **3.04 FIELD QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- E. Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd (76 cu m) or less of each class of concrete placed.
- F. Take one additional set of test cylinders during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken.

### **3.05 PLACING CONCRETE**

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify not less than 24 hours prior to commencement of placement operations.
- D. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- E. Repair vapor barrier damaged during placement of concrete reinforcing. Repair with vapor barrier material; lap over damaged areas minimum 6 inches and seal watertight.
- F. Separate slabs on grade from vertical surfaces with joint filler.
- G. Place joint filler in floor slab pattern placement sequence. Set top to required

elevations. Secure to resist movement by wet concrete.

- H. Extend joint filler from bottom of slab to within 1/2 inch (13 mm) of finished slab surface.
- I. Install joint devices in accordance with manufacturer's instructions.
- J. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- K. Install joint device anchors for expansion joint assemblies as specified. Maintain correct position to allow joint cover to be flush with floor and wall finish.
- L. Apply sealants in joint devices in accordance with Manufacturer.
- M. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- N. Place concrete continuously between predetermined expansion, control, and construction joints.
- O. Do not interrupt successive placement; do not permit cold joints to occur.
- P. Place floor slabs in checkerboard or saw cut pattern indicated.
- Q. Saw cut joints within 24 hours after placing. Use 3/16 inch thick blade, cut into 1/4 depth of slab thickness.
- R. Screed floors level, maintaining surface flatness of maximum 1/4 inch in 10 ft.

### **3.06 CONCRETE FINISHING**

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
  - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
  - 2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
  - 3. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.

- D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
1. Wood float surfaces that will receive quarry tile, ceramic tile, and terrazzo with full bed setting system.
  2. Steel trowel surfaces that will receive carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
  3. Steel trowel surfaces that will be left exposed.
    - a. Chemical Hardener: After slab has cured, apply water-diluted hardener in three coats per manufacturer's instructions, allowing 24 hours between coats.
- E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

### **3.07 CURING AND PROTECTION**

- A. Comply with requirements of ACI 308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, rain and flowing water, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
1. Normal concrete: Not less than 7 days.
  2. High early strength concrete: Not less than 4 days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. After forms are removed, an approved membrane forming curing compound, to seal water in the concrete, shall be applied to all concrete except surfaces which are to receive future concrete or mortar necessary for hydration of cement and hardening of concrete.
1. Normal concrete: Not less than 7 days.
  2. High early strength concrete: Not less than 4 days.
- E. Surfaces Not in Contact with Forms:
1. Start initial curing as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
  2. Begin final curing after initial curing but before surface is dry.
    - a. Moisture-retaining cover: Seal in place with waterproof tape or adhesive.
    - b. Curing compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

### **3.08 WATER TIGHTNESS**

- A. All concrete structures for holding and transporting water and wastewater, and pits below ground level, shall be watertight; a drop in the water level of more than  $\frac{1}{4}$  inch within 24 hours will not be permitted when waterholding and transporting structures, and pits below ground level, are filled.
- B. All exposed surfaces of water holding and transporting structures, and interiors of pits below ground water level, shall be free from visible damp spots and seepages before acceptance.
- C. The Contractor shall fill and test structures prior to backfilling, as directed by the Engineer.

### **3.09 CONTROL JOINTS**

- A. Construction Joints: Shall be formed using galvanized metal keyway or job-built wood forms with keyway.
- B. Sawed Joints: Shall be sawed within 24-hours of placing the concrete.
- C. Expansion Joints: Shall be located where new concrete is to be placed up to existing concrete and as shown on the drawings or as directed by the Engineer.
- D. General: Joints shall be located so that the maximum area between shall not exceed 600 square feet. Length to width ratios shall not exceed 2 to 1. Refer to the drawings for a specific joint pattern.

### **3.10 DEFECTIVE WORK**

Concrete not conforming with the plans and specifications, not formed as shown on the plans, has a defective surface, or lacks the required strength shall be removed from the job site at the contractor's expense or repaired as directed by the Engineer.

**END OF SECTION**