

PROJECT MANUAL

for

# Tugalo Street Greenspace Toccoa, Georgia

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ARCHITECT/ENGINEER

CPL | Architecture, Engineering, & Planning  
3011 Sutton Gate Drive, Suite 130  
Suwanee, Georgia 30024  
(770) 831-9000

**CPL PROJECT NUMBER R22.16993.00**

Issue Date: September 25, 2023

**OWNER****CITY OF TOCCOA**

(706) 886-8451

92 North Alexander Street  
Toccoa, GA 30577Connie Tabor – Community Development Director  
Jeremy Ward – Asst. Planning Director  
Kristin Deal – Main Street Manager

(706) 282-3269

**CONSULTANT****CPL Architecture, Engineering, and Planning**

(770) 831-9000

3011 Sutton Gate Drive, Suite 130  
Suwanee, Georgia 30024Kevin McOmber - Principal  
Catherine Newberry – Landscape Architectural Designer (678) 318-1015

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## INVITATION TO BID

TUGALO STREET GREENSPACE PROJECT  
PROJECT BID NO. T-2023-001  
TOCCOA, GEORGIA

The City of Toccoa, Georgia is soliciting competitive sealed bids from qualified contractors for construction of the TUGALO STREET GREENSPACE PROJECT. Sealed bids will be received by the City of Toccoa, 92 North Alexander Street, Toccoa, Georgia 30577, until 12:00 p.m. local time on FRIDAY, NOVEMBER 3, 2023 at 12:00 p.m. Any bid received after 12:00 p.m. will not be accepted. Bids will be publicly opened and read aloud at 12:05 p.m. on November 3, 2023. The bid envelope must be marked on the outside with Bid Number, name of Bidder, date, and time of opening.

Work required under this Contract includes furnishing materials, labor, equipment, etc. for the construction of a new City Park by modifying and partially replacing the existing parking lot at East Tugalo Street (GA Hwy 184), between North Pond Street and North Sage Street, and Rice-Lewis-Gilliard Way (south alley of parking lot). Construction Drawings and Specifications are available for viewing at the following locations:

City of Toccoa  
92 North Alexander Street  
Toccoa, Georgia 30577

CPL Architecture, Engineering, and Planning  
3011 Sutton Gate Drive, Suite 130  
Suwanee, Georgia 30024

Bids shall be entered on a lump sum basis and as described on the enclosed bid form.

One complete set of drawings and specifications shall be provided to qualified General Contractors only, at no cost. No partial sets of working drawings or specifications shall be issued.

There will be a non-mandatory pre-bid conference on October 12, 2023 at 10:00 a.m. at the City of Toccoa City Hall. Prospective bidders are encouraged to attend this meeting.

Bids in the case of Corporations not chartered in Georgia, must be accompanied by proper certification stating that said Corporation is authorized to do business in the State of Georgia.

No Bidder may withdraw his Bid within ninety (90) days after the actual date of the opening thereof.

All Bidders are required to submit a Bid Bond or a certified check made payable to the City of Toccoa in the amount of five percent (5%) of the total amount bid. The successful bidder will be required to furnish a contract performance bond and payment bond in the amount of one hundred percent (100%) of the total amount bid and provide insurance coverage as required by the contract documents. The Bid Bond or certified check must be enclosed in the envelope with the sealed bid.

TUGALO STREET GREENSPACE PROJECT

CPL R22.16993.00

INVITATION TO BID

SECTION 00 010-2

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Bonding Company must be licensed to do business in Georgia, licensed to do business by the Georgia Secretary of State, authorized to do business in Georgia by the Georgia Insurance Department, listed in the Department of the Treasury's Publication of Companies Holding Certificates of Authority as Acceptable Surety on Federal Bonds and as Acceptable Reinsuring Companies and have an A.M. Best rating of A-, Class VI or higher.

The Owner will award the Contract to the lowest "qualified" bidder, subject with the Owner's right to reject any or all bids, to waive technicalities, and to make an award deemed in its best interests.

CITY OF TOCCOA

SECTION I  
INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS:

- 1.1 The terms used in Instructions to Bidders and defined in General Conditions (Section G) shall have meanings assigned to them in General Conditions.
- 1.2 The term “Successful Bidder” means the Bidder to whom the Owner awards or expects to award the contract.

2. COPIES OF BID DOCUMENTS:

- 2.1 Bid Document Package may be available in advance to contractors and other interested parties at the cost and location stipulated in the INVITATION TO BID.
- 2.2 Complete sets of Bid Documents shall be used in preparing Bids. The Owner assumes no responsibility for errors or misinterpretations resulting from using incomplete sets of Bid Documents.
- 2.3 The Owner, in making Bid Documents available on the above terms, does so only to obtain Bids on Work and does not confer license or grant for any other use.
- 2.4 Any part of the Bid Documents may be modified by Addenda.

Where forms are provided, **THEY MUST BE USED WITHOUT SUBSTITUTION!** Use of forms other than those provided by the City shall constitute a non-responsive Bid and shall be rejected.

NOTE: Bidder must submit one original and one copy of Bid Documents to include: Bid Form; Instructions to Bidders; Bidder’s Affidavit; Non-Collusion Affidavit; and Bid Bond.

3. QUALIFICATIONS OF BIDDERS:

- 3.1 The City may make any investigations deemed necessary to determine Bidder’s ability to perform the Work, and Bidder shall furnish all information and data requested by the City. The City reserves right to reject any bid from any Bidder that the City considers not properly qualified to carry out Contract obligations or able to satisfactorily complete the Work on schedule.

- 3.2 If Bidder does not have offices in the State of Georgia, such Bidder shall designate a proper agent in the State of Georgia on whom service can be made in the event of litigation.

4. EXAMINATION OF BID DOCUMENTS AND SITE:

- 4.1 Before submitting Bid, each Bidder shall: (a) examine the Bid Document Package thoroughly; (b) visit the site to become familiar with local conditions affecting cost or Work progress or performance; (c) become familiar with federal, state, and local laws, ordinances, rules, and regulations affecting cost or Work progress or performance; (d) study and carefully correlate Bidder's observations with the Bid Document Package; and, (e) notify The Architect concerning conflicts, errors, or discrepancies in Bid Document Package.
- 4.2 On request, The Architect may provide each Bidder access to the site to conduct investigations and tests that Bidder deems necessary in order to submit Bid subject to easement acquisitions and existing conditions.
- 4.3 Bid submission will constitute **incontrovertible** representation that Bidder understands and has complied with requirements contained in this Article 4, and that Bidder has read and understood the Bid Document Package and hereby stipulates that the documents are sufficient in scope and detail to indicate and convey understanding for terms and conditions in order to perform Work.

5. ADDENDA AND INTERPRETATIONS:

- 5.1 Questions concerning meaning or intent of Bid Document Package shall be directed in writing to Catherine Newberry at cnewberry@cplteam.com. Replies will be issued by Addenda mail or delivered to parties recorded by the Department as having received Bid Document Package. Questions received less than two (2) business days prior to date for opening Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 5.2 Addenda may be issued to modify Bid Document Package as deemed necessary by the City.

6. BID SECURITY:

- 6.1 Each bid shall be accompanied by Bid Security made payable to Owner in the amount equal to five percent (5%) of the Bidder's maximum Bid Price. Bid Security shall be cashier's check or Bid Bond issued by Surety



meeting requirements contained in paragraph 24 below. **Bid bond must be on City provided form found in bid package.** Failure to use City forms may constitute a non-responsive bid and may be rejected.

- 6.2 Bid Security for Successful Bidder will be retained until Bidder has executed Agreement and furnished required payment and performance bonds. If Successful Bidder fails to furnish the qualifications submittals or fails to execute and deliver Agreement and furnish required Payment and Performance Bonds within fifteen (15) calendar days after Notice of Award, Owner may annul Notice of Award and Bidder's Bid Security will be forfeited.

Bid Security, for any Bidder that the City believes to have reasonable chance to receive award, may be retained by Owner until the ninety-first (91<sup>st</sup>) day after Bid opening. If Notice of Award is issued within ninety (90) calendar days after Bid opening, Bid Security for Bidder receiving Notice of Award may be retained by Owner up to ninety (90) calendar days after Notice of Award.

- 6.3 Bid Bond shall be issued by company having a registered agent in State of Georgia and shall comply with the additional requirements of paragraph 23 below.

7. CONTRACT TIME:

The Work shall be completed within the one hundred and fifty (150) consecutive calendar days.

8. EXAMINATION OF BID PLANS AND SPECIFICATIONS:

Bidders are advised to carefully examine the Bid Plans and Specifications for the proposed Work. The Bid Plans indicate the surface and underground structures likely to affect the prosecution of the Work insofar as they have been determined, but the information indicated is not guaranteed as being correct and complete. Bidders are expected to examine the Bid Plans and the location of the Work, verify all information with authorities concerned, and judge for themselves all the circumstances affecting the cost of the Work and the time required for its completion, and shall assume all patent and latent risks in connection therewith.

9. BID BOND FORFEITURE:

The Successful Bidder, upon his failure or refusal to execute and deliver the Contract and Bonds required within fifteen (15) calendar days after receipt of Notice of Award, shall forfeit to the Owner, as penalty for such failure or refusal, the security deposited with Bid.

Provisions for penalty are set forth in the Advertisement for Bid, Bid Documents, and Specifications (including General Conditions).

10. SUBSTITUTE OR “OR EQUAL” TERMS:

- 10.1 The Contract, if awarded, will be based on material and equipment described in Plans or specified in Specifications without consideration for possible substitute or “or equal” items. Where indicated in Plans or specified in Specifications, substitute or “or equal” material or equipment may be furnished or used by Contractor, **if acceptable to the Architect**. Application for substitute or “or equal” items will be considered by the Owner until seven (7) calendar days **prior** to date for opening Bids.

Procedure for submitting application and consideration by the Architect is set forth in General Conditions and may be supplemented in Paragraphs 11.2 and 11.3 following.

- 10.2 Materials or equipment specified or described in Bid Document Package by proprietary name or by naming a particular supplier are intended to establish type, function, and quality required. Unless name is followed by words indicating no substitution is permitted, materials or equipment from other suppliers may be accepted by the Architect **if sufficient information is submitted by Bidder** to allow the Architect to determine material or equipment proposed is equivalent or equal to named material or equipment. Bidders shall make written application to the Architect for proposed substitute material or equipment, and shall certify that the proposed substitute material or equipment will perform adequate functions and achieve results called for by general design, be similar and equal substance to item specified, and be suited to same use as specified material or equipment. Application shall state that the Architect’s acceptance of proposed substitute will not prejudice Contractor’s achieving Substantial Completion on time, will or will not require changes to Contract Documents to adapt design to proposed substitute, and will or will not require payment for license fee or royalty. Bidder shall indicate acceptance of responsibility for all costs of redesign, which will be required through approval of Bidder’s application.

Variations for proposed substitute from item specified will be identified in application and available maintenance, repair, and replacement service will be indicated.

- 10.3 Bidders may propose substitute construction means, methods, sequences, techniques, or procedures for specific construction means, methods, techniques, sequences, or procedures indicated in or required by Bid Document Package. Bidders shall submit sufficient information to allow

the Architect to determine substitute proposed is equivalent to means, method, sequence, technique, or procedure indicated or required by Bid Document Package. Procedure for review by the Architect will be similar to method provided in Paragraph 11.2 above.

- 10.4 The Architect will be allowed reasonable time to evaluate each proposed substitute. No application for substitute will be considered later than seven (7) calendar days prior to bid opening date. The Architect will be sole judge concerning proposed substitute acceptability.

11. SUBCONTRACTORS, SUPPLIERS AND OTHERS:

- 11.1 Each Bid shall identify names and addresses for subcontractors, suppliers, and other persons and organizations furnishing material and equipment, or Bid will be considered non-responsive. The Bidder is cautioned that any person, firm or other party to whom it is proposed to award a subcontract under this Contract must meet the same conditions of experience, competent personnel and workman's compensation insurance as the Bidder.

If requested by the Architect, the Successful Bidder and any other Bidder shall, within seven (7) calendar days after request, submit to the Architect experience statement with pertinent information for similar projects and other qualifications for each subcontractor, supplier, person, and organization. If the Architect, after due investigation has reasonable objection to any proposed subcontractor, supplier, person, or organization, the Architect may, before giving Notice of Award, request Successful Bidder to submit acceptable substitute without increase in Contract Price or Contract Time. If Successful Bidder declines to make substitution, the Architect may elect not to award contract to Bidder. Bidder's declining to make substitution will not constitute grounds for sacrificing Bid Security.

- 11.2 Procedures for approving Subcontractors after executing Agreement are described in the General Conditions. No subcontractors may be employed without the specific written authorization of the Architect.
- 11.3 No Contractor will be required to employ subcontractor, supplier, person, or organization against whom Contractor has reasonable objection.

12. NOTICE OF SPECIAL CONDITIONS:

Attention is particularly called to those parts of the Specifications (including General Conditions) which deal with the following:

- a. Insurance Requirements

13. BID FORM:

- 13.1 Bid Form is included in the Bid Document package purchased by the Bidders.
- 13.2 Bid Forms shall be completed and submitted in duplicate.
- 13.3 Bids by corporations shall be executed in corporate name by president or vice-president (or other corporate officer accompanied by evidence indicating officer has authority to sign) and corporate seal shall be affixed and attested by secretary or assistant secretary. Corporate address and state of incorporation shall be shown below signature. If Bid is executed by someone other than president or vice-president, attach to Bid certified corporate resolution by board of directors authorizing person to execute Bid for Corporation.
- 13.4 Bids by partnerships shall be executed in partnership name and signed by partner, whose title shall appear under signature and official partnership address shall be shown below signature.
- 13.5 If requested, person signing Bid for corporation or partnership shall produce evidence satisfactory to Owner indicating person's authority to bind corporation or partnership.
- 13.6 Names shall be typed or printed below signature.
- 13.7 Bid shall contain acknowledgement Bidder has received Addenda (Addenda numbers shall be filled in on Bid Form).
- 13.8 Address and telephone number for communications regarding Bid shall be shown.
- 13.9 Bidder must furnish, in his Bid (if not furnished with Pre-Qualification Package), summary information relative to the facilities, ability, and financial resources available for the fulfillment of the Contract.

14. QUANTITIES OF WORK:

The quantities of Work shown on the drawings are approximate and are assumed solely for comparison of the proposals. They are not guaranteed to be accurate statements or estimates of quantities of Work that are to be performed under the Contract, and any departure, therefrom will not be accepted as valid grounds for any claim for damages, for extension of time or for loss of profits; nor will any additional payments other than that bid, be made regardless of the actual quantities required or ordered to complete the Work.

**15. SUBMISSION OF BIDS:**

- 15.1 Bids shall be submitted before time and at place indicated in Advertisement for Bid and shall be submitted in sealed envelope with the following notation on the face:

**BID NUMBER: T-2023-001**  
**TUGALO STREET GREENSPACE PROJECT**  
**NAME OF BIDDER**  
**DATE AND TIME OF OPENING**

If Bid is sent through mail or other delivery system, sealed envelope shall be enclosed in separate envelope with same notations as above on face.

- 15.2 Each Bid shall contain following documents in completed form (City forms must be used without substitution):
1. Bid Form
  2. Bidder's Affidavit
  3. Non-Collusion Affidavit
  4. Bid Security (Surety Bond on City provided Form or Certified or Cashier's Check)
  5. Power of Attorney (Surety Bonds only)
  6. Corporate authority to execute Bid (required for any corporate officer other than president or vice-president)
- 15.3 More than one Bid received for same work from individual, firm, partnership, corporation, or association under same or different names will not be considered. Reasonable grounds for believing any Bidder is interested in more than one Bid for same work will cause Owner to reject all Bids from Bidder. If Owner believes collusion exists among Bidders, Bids from participants in collusion will not be considered.
- 15.4 Conditions, limitations, or provisions attached by the Bidder to the Bid Forms may cause its rejection. Bids containing Items not included in the form of Bid will be considered irregular.

**16. MODIFICATION AND WITHDRAWAL OF BIDS:**

- 16.1 Withdrawal Prior to Time for Receiving Bids: Bids may be modified or withdrawn by appropriate document duly executed (in manner Bid must be executed) and delivered to place where Bids are to be submitted at any time prior to deadline for submitting Bids. Bid Withdrawal will not prejudice Bidder's rights to submit new Bid prior to Bid Date and Time.

- 16.2 Withdrawal After Time for Receiving Bids: After period for receiving Bids has expired, no Bid may be withdrawn, modified, or explained except as provided for in paragraph 18 below.

17. OPENING OF BIDS:

Bids will be opened publicly at the time and place set forth in the INVITATION TO BID and read aloud. Abstract listing amount for Base Bids and major alternates will be made available after Bid opening.

- 17.1 After Bid opening Bidder has up to twenty-four (24) hours to notify the City that Bidder made an obvious error in Bid calculation. Bid Bond withdrawal for this reason shall be requested in writing within this same twenty-four (24) hour period. Said written request shall be accompanied by sufficient documentation to demonstrate the origin and composition of the "obvious error." Bid Bond may not be withdrawn for any other reason.

18. BIDS TO REMAIN OPEN:

Bids shall remain open for acceptance by Owner for ninety (90) calendar days after Bid opening. Owner may, at its sole discretion, release any Bid prior to that date.

19. AWARD OF CONTRACT:

- 19.1 To extent permitted by applicable state and federal laws and regulations, Owner reserves the right to reject any and all Bids, to waive any and all informalities, and to disregard nonconforming, non-responsive, or conditional Bids. Bids may be considered irregular and subject to rejection if they show serious omission, unauthorized form alterations, use unauthorized forms, unauthorized alternate bids, incomplete or unbalanced unit prices, or other irregularities. Discrepancies between words and figures will be resolved in favor of correct sum. Any mistake which is obviously a clerical one, such as an error in price extension, or in placement of decimal points, reversal of prices, FOB destination, FOB point of origin, etc., may be corrected by the purchasing authority after verification is made by the bidder. However, under no circumstances can unit prices be changed.
- 19.2 Contract will be awarded by Owner pursuant to applicable law. Nothing contained herein shall place duty upon Owner to reject bids or award contract based upon anything other than Owner's sole discretion as described herein.

- 19.3 The Department may consider qualifications and experience for subcontractors, suppliers, persons, and organizations proposed for Work.
- 19.4 The Department may conduct investigations deemed necessary to assist in evaluating Bids and to establish responsibility, qualifications, and financial ability for Bidders, proposed Subcontractors, persons, and organizations to do Work. Owner reserves right to reject Bid from any Bidder not passing evaluation to Owner's satisfaction.
- 19.5 One contract for Work will be awarded, if award is made, based upon Base Bid to lowest responsible, responsive Bidder. Alternate Bids will not be considered as basis for award unless specifically stated on the Bid Form. Successful Bidder will be required to perform Work as Prime Contractor. Work performed by Contractor shall be 30% minimum. No Contract assignment or subcontracting will be allowed without written permission from the Architect.
- 19.6 The Successful Bidder will be required to furnish a Performance and Payment Bond, Each in a sum not less than one hundred percent (100%) of the amount of the Contract. The Bonds shall be that of an approved surety meeting the requirements as noted in paragraphs 6 and 24 herein.
- 19.7 If at any time after the execution and approval of the Contract and of the Surety Bonds as required in the Bid Advertisement, the Owner shall deem any of the Sureties upon such Bonds to be unsatisfactory, or such Bonds to be inadequate security for the Owner, the Contractor shall, within five (5) calendar days after notice from Owner to do so, furnish new or additional Contract Bonds, in form and sum, and signed by such Sureties who all shall be satisfactory to the Owner. No further payment will be deemed due nor will any further payment be made to the Contractor unless such new or additional Bonds are furnished and approved. The premium on such Bonds shall be paid by the Contractor.

Failure of the Contractor to submit approved Performance and Payment Bonds within the required five (5) calendar days shall, at the discretion of the Owner, constitute a forfeiture of the Bid Bond.

20. SUBMITTALS BY SUCCESSFUL BIDDER:

- 20.1 Owner intends to award contract to Bidder competent to perform and complete Work in satisfactory manner. Owner will require Successful Bidder to submit, within seven (7) calendar days after receiving written request from the Architect and prior to contract award, Preliminary Progress Schedule and Schedule of Values, as set forth below.

- 20.2 Preliminary Progress Schedule shall be submitted in triplicate and include time-scaled schedule and narrative in accordance with appropriate formats established in the Architects' written request for schedules. Activities in schedule shall show order Successful Bidder proposes to perform Work within constraints and sequencing conditions set forth in Specification (including General Conditions) and shall indicate starting and completion dates for key milestones and Work pertaining to each Specifications division within each major structure or geographical area on site. Activities shall identify significant submittals and approvals, major equipment deliveries, equipment testing, Owner's responsibilities, affected utilities, and other similarly involved third parties.
- 20.3 Schedule of Values shall include Bid itemization by major structures or Work areas.
- 20.4 Successful Bidder and surety, if any, agree any delays within Bidder's control in delivering submittals shall constitute request by Bidder for time extension and Bid shall remain open for Owner's acceptance. If Owner agrees to time extension, Bidder shall comply with Submittal Requirement within five (5) additional calendar days. At Owner's option, failure by Successful Bidder to deliver submittals within extended period will void Bid evaluation and will constitute proof Successful Bidder has abandoned Bid, Bid Security may be declared forfeited to Owner as liquidated damages, and Work may be awarded to Another Bidder.
21. BUSINESS LICENSE:
- Successful Bidder's submittals shall include a copy of Bidder's business license.
22. TAXES:
- Contractor shall pay applicable sales, consumer, use, and other similar taxes required by law. Contractor is responsible for reviewing pertinent state statutes involving sales tax and complying with requirements.
- The Contract prices for articles, materials, or equipment names herein are subject to increase by the amount of any additional tax or taxes affecting the articles, materials or equipment involved in the Contract imposed by or under the authority of the Federal or State Government and passed or taking effect after the receipt of Bids, and shall continue in effect during such time as such tax or taxes are lawfully collectible; provided, however, that in the event of such increase in cost, the claim shall be presented within thirty (30) days and supported by evidence of such additional tax, satisfactory to the City Attorney.



**23. QUALIFICATIONS OF SURETY COMPANIES:**

In order to be acceptable to Owner, surety company issuing Bid Guaranty Bonds or 100% Performance/Payment bonds as required in Bid Advertisement shall meet and comply with following minimum standards:

- 23.1 Bonding Company must be licensed to do business in Georgia by the Georgia Secretary of State, authorized to do business in Georgia by the Georgia Insurance Department, listed in the Department of the Treasury's Publication of Companies Holding Certificates of Authority as Acceptable Surety on Federal Bonds and as Acceptable Reinsuring Companies and have an A.M. Best rating of A-, Class VI or higher.
- 23.2 All bonds must be submitted on forms provided by the City and agencies providing bonds and insurance must provide proof that they meet the criteria outlined in the bid and contract documents.
- 23.3 Surety shall be admitted to do business in State of Georgia and shall be registered to provide such surety the State of Georgia Insurance Commissioner.
- 23.4 Attorneys-in-fact who sign bid bonds or performance/payment Bonds shall file with bond certified power of attorney to sign bond.
- 23.5 Surety company agents shall list name, address, and telephone number on bonds.
- 23.6 Performance and payment Bonds shall extend twelve (12) months beyond date of final payment and shall contain waiver for alteration to Contract terms, time extensions, or forbearance on Owner's part.

**24. EXECUTION OF WRITTEN CONTRACT**

Successful Bidder will be required to sign written contract identified in bid package as Agreement. Unsigned Agreement will be submitted to Successful Bidder either prior to or along with the Notice of Award. The Contractor shall sign and deliver the fully executed Agreements to Owner with all required bonds within ten (10) calendar days following receipt of Agreement forms, (unless otherwise stipulated by the Owner).

25. AREA OFFICE:

If required by the Architect, the Contractor will be required to establish an office and an equipment and spare parts storage yard within Stephens County to conduct this work and must arrange to cope with any emergency that may arise in connection with the Work on a twenty-four (24) hour per day, seven (7) day per week basis.

26. PROTESTS:

Owner is responsible for resolving protests concerning contract award, claims, disputes, alleged license fees, and other related procurement matters in accordance with sound business judgment and good administrative practice. Following procedures shall be used for this purpose:

- 26.1 Any party with direct financial interest adversely affected by Owner's procurement decision shall file protest under this article, or be barred further relief.
- 26.2 Protest shall: (a) be made in writing, oral protests will not be permitted; (b) adequately state basis for protest and relief requested; and (c) be received by Owner within seven (7) calendar days from date basis for protest was, or should have been, known.
- 26.3 Owner may defer protested procurement upon receiving procedurally adequate protests, provided in any even awarding contract, subcontract, or procurement for sub item may be permitted, at Owner's sole discretion, where award will not materially affect resolving protest.
- 26.4 Protest shall be limited to: (a) issues arising from procurement provisions contained in Specifications; and (b) state or local law. No protest may be filed with respect to basic project design.
- 26.5 City Attorney will establish procedures for resolving protests. Owner will rely for protest resolution on decisions issued under Georgia law, as well as decisions issued under Georgia law, as well as decisions issued by other states, Federal courts, U.S. Comptroller General, or other Federal agencies with extensive procurement expertise, if state law is not clearly established.

27. BIDDER'S ACKNOWLEDGEMENT:

The undersigned bidder acknowledges all requirements outlined in the above "Instructions to Bidders Package" and all documents referred to therein. This signed form must accompany the completed bid form submitted at the time of bid.

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_  
(President, Vice President or  
Corporate Officer)

PRINTED NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

ATTESTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
(Secretary of Corporation)

PRINTED NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

SEAL

(Corporate Seal Required if Bidder is a Corporation)

COMPANY NAME:

\_\_\_\_\_

ADDRESS:

\_\_\_\_\_

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

TELEPHONE NO:

\_\_\_\_\_

END OF SECTION 00 100

BID FORM

**TUGALO STREET GREENSPACE**

BID NUMBER: T-2023-001

BID DATE: November 3, 2023 – 12:00 PM

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

BY: \_\_\_\_\_  
(Bidder)

PROJECT DESCRIPTION: Construction of a new City Park by modifying and partially replacing the existing parking lot at East Tugalo Street (GA Hwy 184), between North Pond Street and North Sage Street, and Rice-Lewis-Gilliard Way (south alley of parking lot).

THIS BID IS SUBMITTED TO: City of Toccoa, Georgia (hereinafter called Owner) acting through its City Council.

- A. Undersigned Bidder offers and agrees to enter into Agreement with Owner, in accordance with the instructions, requirements and forms included in Bid Document Package (including the Invitation to Bid and Instructions to Bidders Package), and to complete all Work for the Bid Price and within required calendar days, all in accordance with the Bid Document Package.

Bidder accepts terms and conditions contained in Bid Document Package including without limitation those dealing with Owner's time for accepting Bid and disposition of Bid Security.

In submitting this Bid, Bidder makes representations required by Instructions to Bidders and further warrants and represents:

Bidder has examined Bid Document Package, including Invitation for Bids and Instructions to Bidders, and following addenda:

No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____

Bidder has examined site and locality where the Work is to be performed and legal requirements (federal, state, and local laws, ordinances, rules, and regulations) and conditions affecting Work cost, difficulty, progress, or performance and has made independent investigations as Bidder deems necessary.

BID FORM

BID NUMBER: T-2023-001

PROJECT DESCRIPTION: TUGALO STREET GREENSPACE

BID DATE: NOVEMEBER 3, 2023

COMPANY NAME: \_\_\_\_\_

BIDDERS SIGNATURE: \_\_\_\_\_

- B. Bidder has carefully studied reports and drawings indicating subsurface conditions and drawing depicting physical conditions as identified in General Conditions and accepts determination concerning technical data contained in reports and drawings on which Bidder is entitled to rely.
- C. Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) examinations, investigations, explorations, tests, and studies (in addition to or to supplement those referred to in "C" above) pertaining to subsurface or physical conditions at site or otherwise affecting cost, progress, performance, or furnishing Work as Bidder considers necessary for performing or furnishing Work at Contract Price, within Contract Time, and in accordance with terms and conditions contained in Bid Document Package, including specifically provisions stated in General Conditions and no additional examinations, investigations, explorations, tests, reports, or similar information or data are or will be required by Bidder.
- D. Bidder has reviewed and checked Plans and data shown or indicated on Bid Document Package with respect to existing underground facilities at or contiguous to site and assumes responsibility for accurately locating underground facilities. No additional examinations, investigations, explorations, tests, reports, or similar information or data concerning underground facilities are or will be required by Bidder in order to perform and furnish Work at Contract Price, within Contract Time, and in accordance with terms and conditions contained in Bid Document Package, including specifically provisions stated in General Conditions.
- E. Bidder has correlated results from observations, examinations, investigations, explorations, tests, reports, and studies with terms and conditions contained in Bid Document Package.
- F. Bidder has given Owner written notice concerning conflicts, errors, or discrepancies discovered in Bid Document Package and written resolution by Owner is acceptable to Bidder.

BID FORM

BID NUMBER: T-2023-001

PROJECT DESCRIPTION: TUGALO STREET GREENSPACE

BID DATE: NOVEMBER 3, 2023

COMPANY NAME: \_\_\_\_\_

BIDDERS SIGNATURE: \_\_\_\_\_

- G. This Bid is genuine and not made in interest of or for any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules produced by any group, association, organization, or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit false or sham Bid; Bidder has not solicited or induced any person, firm, or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

Bidder submits following lump sum/unit prices identified in Bid Form as part of this Bid:

ITEM NO.	DESCRIPTION	PRICES (In Words & Figures)	AMOUNT
1a.	BASE BID (LUMP SUM)		
			_____ Dollars _____ Cents
	(Base Bid Includes all work identified in the contract documents.	(\$ _____)	
1b.	Mass Rock Excavation – 100 CY @ (unit price here) (\$ _____) per CY (total 1b. price here) (\$ _____)		_____ Dollars _____ Cents
1c.	Trench Rock Excavation – 50 CY @ (unit price here) (\$ _____) per CY (total 1c. price here) (\$ _____)		_____ Dollars _____ Cents
1d.	Additional Suitable Material – 100 CY @ (unit price here) (\$ _____) per CY (total 1d. price here) (\$ _____)		_____ Dollars _____ Cents
1e.	French Drains – 100 LF of 6" HDPE @ (unit price here) (\$ _____) per LF (total 1e. price here) (\$ _____)		_____ Dollars _____ Cents
1.	(TOTAL BASE BID) (include the sum of items 1a., 1b., 1c., 1d. and 1e.)		
			_____ Dollars _____ Cents
	(This amount shall be used as the base bid as identified in paragraph 19.5 of the Instruction to Bidders)	(\$ _____)	

BID FORM

BID NUMBER: T-2023-001

PROJECT DESCRIPTION: TUGALO STREET GREENSPACE

BID DATE: NOVEMBER 3, 2023

COMPANY NAME: \_\_\_\_\_

BIDDERS SIGNATURE: \_\_\_\_\_

Attached prices shall include all labor, materials, balling, shoring, removal, overhead (Direct and Indirect), profit, insurance, bonds, and other costs, to cover all finished Work.

Bidder agrees this Bid shall be good and may not be withdrawn for a period of 90 calendar days after scheduled closing time for receiving bids.

There is enclosed herewith a certified or cashier's check or a Bid Bond to the order of City of Toccoa, Georgia, in the sum of \$ \_\_\_\_\_ Dollars.

Check or Bid Bond shall be equal to, not less than, the amount stipulated in INVITATION TO BID and it is understood and agreed that said check or Bid Bond shall be subject to terms and conditions stipulated in Bid Document Package.

Undersigned Bidder hereby agrees to each and every stipulation in Bid Document Package pertaining to the submission of Bids and further, if awarded the Contract, duly agrees to execute and secure the required Contract and Bid Document Package within ten (10) days from service of Notice of Award and deliver a surety bond or bonds as required by General Conditions. The name and business address of Bidder to which all formal Notices shall be sent:

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

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

\_\_\_\_\_

BID FORM

BID NUMBER: T-2023-001

PROJECT DESCRIPTION: TUGALO STREET GREENSPACE

BID DATE: NOVEMBER 3, 2023

COMPANY NAME: \_\_\_\_\_

BIDDERS SIGNATURE: \_\_\_\_\_

Undersigned Bidder states the names and addresses of persons interested as principals in this Bid are as follows: (Write first name in full):

---

---

---

Bidder shall state on line below, if a corporation, the name of State in which incorporated and the date of said incorporation:

---

Undersigned Bidder states (he/she/they) (is a/are) citizen(s) of the United States and all partners, associates, or principals interested herein are citizens of the United States, except: (Give full names and addresses):

---

---

---

---

Undersigned Bidder submitting this Bid certifies and affirms that such Bid is genuine and not collusive or sham; that said Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any Bidder or person, to put in a sham Bid, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person to fix the Bid Price of affiant or any other Bidder, or to fix any overhead, profit, or cost element of said Bid Price, or of that of any other Bidder, or to secure any advantage against the City of Toccoa or any person interested in the proposed Contract; and that all statements contained in said Bid are true, and further, that such Bidder has not directly or indirectly submitted this Bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof; and, that no



member of Owner or other officers or employees of said Owner is interested directly or indirectly in the Bid or in any portion of the Bid nor the Contract or any part of the Contract which may be awarded the undersigned Bidder on the basis of such Bid.

The undersigned bidder acknowledges the requirements of the Plans and Specifications for this project. It is further understood that quantities are approximate, are solely for the purpose of comparing proposals, and are not represented by the Owner as an accurate statement of the actual work to be performed under the Contract.

The Bidder agrees to complete the Contract awarded within the “allowable calendar days for completion” from the date of the “Notice to Proceed” and he further agrees that the owner may retain from the monies which may become due the amount of five hundred dollars per day for each and every day that the completion of the work may be delayed.

**NOTE: See paragraph 13 of “Instruction to Bidders” for requirements in completing signature block below and remainder of this page.**

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_  
(President, Vice President or Corporate Office)

PRINTED NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

ATTESTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
(Secretary of Corporation must attest)

PRINTED NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

(Corporate Seal Required if Bidder is a Corporation)

BIDDER'S AFFIDAVIT

BID NUMBER: T-2023-001

BID DATE: NOVEMBER 3, 2023

PROJECT DESCRIPTION: TUGALO STREET GREENSPACE

STATE OF \_\_\_\_\_)

COUNTY OF \_\_\_\_\_)

\_\_\_\_\_  
(Name Printed)

being duly sworn, deposes and says that he resides at \_\_\_\_\_

\_\_\_\_\_  
that he is the

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Name of Bidder)

who signed the above Bid Form, that he was duly authorized to sign and that the Bid is the true offer of the Bidder, that the seal attached is the seal of the Bidder and that all the declarations and statements contained in the Bid are true to the best of his knowledge and belief.

\_\_\_\_\_  
(Affiant)

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 2023.

\_\_\_\_\_  
(Notary Public in and for

\_\_\_\_\_  
County

My Commission expires \_\_\_\_\_.

(SEAL)

## FORM OF NON-COLLUSION AFFIDAVIT

(This Non-Collusion Affidavit is Part of the Bid Documents)

BID NUMBER: T-2023-001BID DATE: NOVEMBER 3, 2023PROJECT DESCRIPTION: TUGALO STREET GREENSPACESTATE OF \_\_\_\_\_ )  
\_\_\_\_\_) SS  
COUNTY OF \_\_\_\_\_ )\_\_\_\_\_  
(Name Printed)\_\_\_\_\_  
being duly sworn, deposes and says that he is\_\_\_\_\_  
(sole owner, partner, president, secretary, etc.)

the party making the foregoing Proposal or Bid; that such Bid is genuine and not collusive or sham; that said Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any Bidder or person, to put in a sham Bid, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person to fix the Bid Price of affiant or any other Bidder, or to fix any overhead, profit, or cost element of said Bid Price, or of that of any other Bidder, or to secure any advantage against the City of Toccoa, or any person interested in the proposed Contract; and that all statements contained in said Proposal or Bid are true, and further, that such Bidder has not, directly or indirectly submitted this Bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof; and, that no member of Owner or other officers or employees of said Owner is interested directly or indirectly in the Bid or in any portion of the Bid nor the Contract or any part of the Contract which may be awarded the undersigned Bidder on the basis of such Bid.

\_\_\_\_\_  
(Affiant)

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 2023.

\_\_\_\_\_  
(Notary Public in and for\_\_\_\_\_  
County\_\_\_\_\_  
My Commission expires  
(SEAL)

BID BOND

(This Bid Bond is part of the Bid Documents)

BID NUMBER: T-2023-001

BID DATE: NOVEMBER 3, 2023

PROJECT DESCRIPTION: TUGALO STREET GREENSPACE

KNOW ALL MEN BY THESE PRESENTS: that

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

\_\_\_\_\_  
(Address of Contract)

a \_\_\_\_\_  
(Corporation, Partnership or individual)

hereinafter called Principal, and

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

a Corporation of the State of \_\_\_\_\_, and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

City of Toccoa  
(Name of Obligee)

92 North Alexander Street, Toccoa, Georgia 30577  
(Address of Obligee)

hereinafter referred to as Obligee, in the penal sum of:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

BID FORM

BID NUMBER: T-2023-001

PROJECT DESCRIPTION: TUGALO STREET GREENSPACE

BID DATE: NOVEMBER 3, 2023

Page 2

WHEREAS, the Principal is about to submit, or has submitted, to the City of Toccoa, Georgia, a proposal for furnishing materials, labor, and equipment for: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

WHEREAS, the Principal desires to file this Bond in accordance with law in lieu of a certified Bidder's check otherwise required to accompany this Proposal.

NOW, THEREFORE, the conditions of this obligation are such that if the proposal be accepted, the Principal shall within ten days after receipt of notification of the acceptance, execute a Contract in accordance with the Proposal and upon the terms, conditions, and prices set forth in the form and manner required by the City of Toccoa, Georgia, and execute a sufficient and satisfactory Performance Bond and Payment Bond payable to the City of Toccoa, Georgia, each in the amount of 100% of the total Contract Price, in form and with security satisfactory to said City of Toccoa, Georgia, and otherwise, to be and remain in full force and virtue in law, and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the City of Toccoa, Georgia, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

PROVIDED, FURTHER, that Principal and Surety agree and represent that this bond is executed pursuant to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including, but not limited to, O.C.G.A. 13-10-1, et. sea. And 36-86-101, et. seg. and is intended to be and shall be constructed as a bond in compliance with the requirements thereof.

(SIGNATURES NEXT PAGE)

BID FORM

BID NUMBER: T-2023-001

PROJECT DESCRIPTION: TUGALO STREET GREENSPACE

BID DATE: NOVEMBER 3, 2023

Page 3

Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_ A.D.,  
\_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal Secretary)

\_\_\_\_\_  
(Principal)

(SEAL)

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

\_\_\_\_\_  
(Witness as to Principal)

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

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

ATTEST:

\_\_\_\_\_  
(Surety)

\_\_\_\_\_  
(Attorney-in-fact)  
(SEAL)

By: \_\_\_\_\_  
(Attorney-in-Fact and Resident Agent)

\_\_\_\_\_  
(Witness as to Surety)

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

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

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute Bond.

IMPORTANT: 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.

AGREEMENT FOR

TUGALO STREET GREENSPACE PROJECT

BID NUMBER: T-2023-001

THIS AGREEMENT, made and executed in Toccoa, Georgia, this \_\_\_\_\_ day of \_\_\_\_\_, 2023, by and between the City of Toccoa situated in the State of Georgia, hereinafter called the "City" and \_\_\_\_\_ an individually owned company with principal offices at \_\_\_\_\_, hereinafter called the "Contractor".

WITNESSETH: That the said Contractor has agreed and by these presents does agree with the City for the prices stipulated in the Bid Form herein contained or hereunto annexed and under the penalty expressed in a bond bearing even date with these presents, and herein contained or hereunto annexed to furnish at his own cost and expense all materials, supplies, machinery, equipment, tools, apparatus, and other means of construction, maintenance and repair, and all management, supervision and labor, and perform all the work necessary to construct, maintain, repair, and complete the work within the scope of this Contract as outlined in the "Invitation to Bid", "Instructions to Bidders", "General Conditions", "Project Plans" and "Specifications" herein contained, including material furnished by the City (if any), commencing the Work within seven (7) calendar days from the date of "Notice to Proceed" from the City, and commencing emergency work within four (4) hours after notification by the City, in the manner specified and in conformity with the requirements set forth in the Project Plans and Specifications herein contained.

The Contractor shall proceed with the said work in a prompt and diligent manner at such times and in such order as the City may direct. Further, he shall complete the work to the satisfaction of the City and within the time stipulated, and in default of completion within the time fixed, this Contract will be subject to termination as stipulated in the Bid Document Package.

The City shall not be liable to the Contractor for any neglect, default, delay or interference of or by any other contractor, nor shall any such neglect, default, delay, or interference of any other contract, or alteration which may be required in the work, release the Contractor from the obligation to finish the work within the time allowed.

It is further mutually agreed by the parties hereto that the work will be performed in accordance with Project Plans and Specifications together with any supplementary instructions as prepared or approved by the City and other contract documents, except in the case of emergency the work will be undertaken by the Contractor immediately upon notification by the City and will be performed in accordance with the contract documents and orders of the City.

## AGREEMENT

Page 2

It is hereby mutually agreed that the City of Toccoa is to pay and the Contractor is to receive the prices bid in the Bid Form herein contained, or hereto annexed, as full compensation for furnishing all materials, supplies, machinery, equipment, tools, apparatus and other means of construction, maintenance and repairs, and all management, supervision, and labor, and perform all construction maintenance, and repair necessary to complete the work under the conditions herein specified, and for fully complying with the terms and conditions of this Contract; provided that any increased cost to the Contractor due to any subsequent levy of Federal or State taxes against any item entering into the work of this Contract exclusive of profits may be reimbursed to the Contractor by the City as provided hereunder.

Subject to the applicable provisions of law, this Contract shall be in full force and effect as a Contract, from the date on which a fully executed and approved counterpart hereof is delivered to the Contractor and shall remain and continue in full force and effect until after the expiration of the guarantee period and the Contractor and his Sureties are finally released by the City.

The Contractor shall remain responsible for performing, in accordance with the terms of the contract, all work assigned prior to the expiration of the allowable calendar days for completion period even if the work is not completed until after the expiration of the allowable calendar day for completion term.

The Bidder agrees to complete the Contract awarded within the "allowable calendar days for completion" from the date of the "Notice to Proceed" and he further agrees that the owner may retain from the monies which may become due the amount of five hundred dollars per day for each and every day that the completion of the work may be delayed.

(SIGNATURES NEXT PAGE)



TUGALO STREET GREENSPACE PROJECT

CPL R22.16993.00

FORM OF AGREEMENT

SECTION 00 500-3

IN WITNESS WHEREOF: The parties have executed this agreement the day and year above mentioned.

Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20\_\_\_\_.

ATTEST:

CITY OF TOCCOA, GEORGIA

\_\_\_\_\_

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

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Contractor)

(SEAL)

ATTEST:

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

\_\_\_\_\_  
(Secretary)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Witness)

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

APPROVED AS TO FORM:

\_\_\_\_\_  
(City Attorney)

NOTE: City Clerk should attest. If Contractor is a corporation, Secretary of Corporation should attest.

PERFORMANCE AND PAYMENT BONDS:

The City of Toccoa requires a performance bond and a payment bond, each having a bond value of one hundred percent (100%) of the total amount bid. The attached performance bond and payment bond must be used for this requirement.

PERFORMANCE BOND

TUGALO STREET GREENSPACE

BID NUMBER: T-2023-001

KNOW ALL MEN BY THESE PRESENTS, That

---

(Name of Contractor)

---

(Address of Contractor)

---

a (Corporation, Partnership or Individual)  
hereinafter called Principal, and

---

(Name of Surety)

---

(Address of Surety)

a Corporation of the State of \_\_\_\_\_ and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

City of Toccoa  
(Name of Oblige)

92 N Alexander St, Toccoa, GA 30577  
(Address of Oblige)

hereinafter referred to as Oblige, are held and firmly bound unto said Oblige and all persons doing work or furnishing skill, tools, machinery, supplies, or material under or for the purpose of the Contract hereinafter referred to, in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such, as whereas the Principal entered into a certain contract, hereto attached with the Oblige, dated \_\_\_\_\_, 20\_\_\_\_ for \_\_\_\_\_

---

## PERFORMANCE BOND

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NOW, THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall well, truly, fully and faithfully perform said contract according to its terms, covenants, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Oblige, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreement of any and all duly authorized modifications of said contract that may hereafter be made, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that said Surety to this Bond, for value received, hereby stipulates and agrees that no change, extension of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations, or additions to the terms of the Contract or to the work to be performed **thereunder**.

**PROVIDED, FURTHER,** that Principal and Surety agree and represent that this bond is executed pursuant to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including, but not limited to, O.C.G.A. 13-10-1, et. seR. and 36-86-10 L et.sea., and is intended to be and shall be construed as a bond in compliance with the requirements thereof.

(SIGNATURES NEXT PAGE)

Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 20\_\_

ATTEST:

\_\_\_\_\_  
(Principal Secretary)

\_\_\_\_\_  
(Principal)

By: \_\_\_\_\_  
(SEAL)

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

\_\_\_\_\_  
(Witness as to Principal)

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

\_\_\_\_\_  
(Surety)

ATTEST:

By: \_\_\_\_\_  
(Attorney-in-Fact)

\_\_\_\_\_  
(Attorney in Fact)  
And Resident Agent

(SEAL)

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

\_\_\_\_\_  
(Witness as to Surety)

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

NOTE: Date of Bond must not be prior to Date of Contract. If Contractor is Partnership, all partners should execute Bond.

IMPORTANT: 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.

PAYMENT BOND

TUGALO STREET GREENSPACE PROJECT

BID NUMBER: T-2023-001

KNOW ALL MEN BY THESE PRESENTS, That

---

(Name of Contractor)

---

(Address of Contractor)

---

a (Corporation, Partnership or Individual)

hereinafter called Principal, and

---

(Name of Surety)

---

(Address of Surety)

a Corporation of the State of \_\_\_\_\_ and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

City of Toccoa

(Name of Obligee)

92 North Alexander Street, Toccoa, Georgia 30577

(Address of Obligee)

hereinafter referred to as Obligee, for the use and protection of all subcontractors and all persons supplying labor, services, skill, tools, machinery, materials and/or equipment in the prosecution of the work provided for in the contract hereinafter referred to in the full and just sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), in lawful money of the United States, for the payment of which sum, well and truly to be made, the Principal and Surety bind themselves, their, and each of their heirs, executors, administrators and successors, jointly and severally firmly by these presents.

The condition of this obligation is such, as whereas the Principal entered into a certain contract, hereto attached with the Obligee, dated \_\_\_\_\_, 20\_\_\_\_ for \_\_\_\_\_

---

## PAYMENT BOND

Page 2

NOW, THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall well, truly, and faithfully perform said contract according to its terms, covenants and conditions, and shall promptly pay all persons furnishing labor, materials services, skill, tools, machinery and/or equipment for use in the performance of said Contract, then this obligation shall be void; otherwise it shall remain in full force and effect.

All persons who have furnished labor, materials, services, skill, tools, machinery and/or equipment for use in the performance of said Contract shall have a direct right of action on this Bond provided payment has not been made in full within ninety (90) days after the last day on which labor was performed, materials, services, skill, tools, machinery, and equipment furnished or the subcontract completed.

PROVIDED FURTHER, that said Surety to this Bond, for value received, hereby stipulates and agrees that no change, extension of time, alterations, or additions to the terms of the Contract or to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations, or additions to the terms of the Contract or to the work to be performed thereunder.

PROVIDED, HOWEVER, that no suit or action shall be commenced hereunder by any person furnishing labor, materials, services, skill, tools, machinery, and/or equipment having a direct contractual relationship with a subcontractor, but no contractual relationship express or implied with the Principal:

Unless such person shall have given notice to the Principal within ninety (90) days after such person did, or performed the last of the work or labor, or furnished the last of the materials, services, skill, tools, machinery and/or equipment for which claim is made stating with substantial accuracy the amount claimed and the name of the party to whom the materials, services, skill, tools, machinery and/or equipment were furnished, or for whom the work or labor was done or performed. Such a notice shall be served by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Principal, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State in which the aforesaid project is located, save that such service need not be made by a public officer, and a copy of such notice shall be delivered to the Obligee, to the person and at the address provided for in the Contract, within five (5) days of the mailing of the notice to the Principal.

---

PAYMENT BOND

Page 3

PROVIDED, FURTHER, that any suit under this bond must be instituted before the expiration of one (1) year after the acceptance of the public works covered by the Contract by the proper authorities.

PROVIDED, FURTHER, that Principal and Surety agree and represent that this bond is executed pursuant to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including, but not limited to, O.C.G.A. 13-10-1, et. seg. and 36-86-101, et. seg., and is intended to be and shall be construed as a bond in compliance with the requirements thereof.

(SIGNATURES NEXT PAGE)

## PAYMENT BOND

BID NUMBER: T-2023-001

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Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_ A. D., 20\_\_\_\_

ATTEST:

\_\_\_\_\_  
(Principal Secretary)

(SEAL)

\_\_\_\_\_  
(Witness as to Principal)\_\_\_\_\_  
(Address)\_\_\_\_\_  
(Surety)

ATTEST:

By: \_\_\_\_\_  
(Attorney-in-Fact)

(SEAL)

\_\_\_\_\_  
(Witness as to Surety)\_\_\_\_\_  
(Address)\_\_\_\_\_  
(Principal)

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

\_\_\_\_\_  
(Address)\_\_\_\_\_  
(Surety)By: \_\_\_\_\_  
(Attorney in Fact)  
And Resident Agent\_\_\_\_\_  
(Address)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute Bond.



IMPORTANT: 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.

**ACKNOWLEDGEMENT OF CONTRACTOR, IF A CORPORATION**

STATE OF )  
 ) SS  
COUNTY OF )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came and appeared \_\_\_\_\_  
to me known, who, being by me duly sworn, did depose and say that he resides at \_\_\_\_\_

that he is the \_\_\_\_\_ of \_\_\_\_\_  
the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

\_\_\_\_\_  
(Notary Public)

(SEAL)

=====

**ACKNOWLEDGEMENT OF CONTRACTOR, IF A PARTNERSHIP**

STATE OF )  
 ) SS  
COUNTY OF )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came and appeared \_\_\_\_\_  
to me known, and known to me to be one of the members of the firm of \_\_\_\_\_  
\_\_\_\_\_ described in and who executed the foregoing instrument, and he  
acknowledged to me that he executed the same as and for the act and deed of said firm.

\_\_\_\_\_  
(Notary Public)

(SEAL)

=====

**ACKNOWLEDGEMENT OF CONTRACTOR, IF AN INDIVIDUAL**

STATE OF )  
 ) SS  
COUNTY OF )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came and appeared \_\_\_\_\_  
to me known, and known to me to be the person described in and who executed the foregoing  
instrument and acknowledged to me that he executed the same as and for the act and deed of said  
firm.

\_\_\_\_\_  
(Notary Public)

(SEAL)

=====

**ACKNOWLEDGEMENT OF PRINCIPAL, IF A FIRM OR PARTNERSHIP**

STATE OF )  
 ) SS  
COUNTY OF )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came and appeared \_\_\_\_\_  
to me known, and known to me to be one of the members of the firm of \_\_\_\_\_  
\_\_\_\_\_ described in and who executed the foregoing instrument and he  
acknowledged to me that he executed the same as and for the act and deed of said firm.

\_\_\_\_\_  
(Notary Public)

(SEAL)

=====

**ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL**

STATE OF )  
 ) SS  
COUNTY OF )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came and appeared \_\_\_\_\_  
to me known to be the person described in and who executed the foregoing instrument and  
acknowledged that he executed the same.

\_\_\_\_\_  
(Notary Public)

(SEAL)

=====

**ACKNOWLEDGEMENT BY SURETY COMPANY**

STATE OF )  
 ) SS  
COUNTY OF )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came and appeared \_\_\_\_\_ the  
to me personally known of \_\_\_\_\_  
corporation described in and which executed within the instrument, who being by me duly  
sworn, did depose and say that he resides at \_\_\_\_\_  
\_\_\_\_\_ that he is the  
\_\_\_\_\_ of the said corporation; that he knows the seal of said  
corporation; that the seal affixed to the said instrument is such corporate seal; that it was so  
affixed by order of the Board of Directors of said corporation, and that he signed his name  
thereto by like order.

\_\_\_\_\_  
(Notary Public)

(SEAL)

**GENERAL CONDITIONS  
FOR CITY OF TOCCOA CONSTRUCTION CONTRACTS**

GC-1 FAMILIARITY WITH SITE

Execution of this agreement by the Contractor is a representation that the Contractor has visited the site, has become familiar with the local conditions under which the Work is to be performed, and has correlated personal observations with the requirements of this agreement.

GC-2 CONTRACT DOCUMENTS

This agreement consists of the City of Toccoa's invitation to bid, instructions to bidders, Contractor's bid form, construction form of agreement, Performance Bond, Payment Bond, general conditions, special provisions, specifications, plans, drawings, addenda, and written change orders.

GC-3 DEFINITIONS

The following terms as used in this agreement are defined as follows:

Change Order - a written order to the Contractor, prepared by the Engineer and issued by the City for changes in the Work within the general scope of the contract documents, adjustment of the contract price, extension of the contract time, or reservation of determination of a time extension.

City - City of Toccoa, Georgia, a political subdivision of the State of Georgia, acting by and through the City Council.

Day - a calendar day of twenty-four hours lasting from midnight of one day to midnight the next day.

Notice to Proceed - written communication issued by the City, or their designated representative, to the Contractor authorizing him to proceed with the Work and establishing the date of commencement and completion of the Work.

Substantial Completion - the date certified by the Engineer when all or a part of the Work, identified in the Engineer's certification, is sufficiently completed in accordance with the requirements of the contract documents so that the identified portion of the Work can be utilized for the purposes for which it is intended.

Work - all of the services specified, indicated, shown or contemplated by the contract documents, and furnishing by the Contractor of all materials, equipment, labor, methods, processes, construction and manufacturing materials and equipment, tools, plans, supplies, power, water, transportation and other things necessary to complete such services in accordance with the contract documents to insure a functional and complete facility.

GQ-4 CODES

All codes, specifications, and standards referenced in the contract documents shall be the latest additions, amendments and revisions of such referenced standards in effect as of the date of the request for proposals for this contract.

GC-5 REVIEW OF CONTRACT DOCUMENTS

Before making its proposal to the City, and continuously after the execution of the agreement, the Contractor shall carefully study and compare the contract documents and shall at once report to the Engineer any error, ambiguity, inconsistency or omission that may be discovered, including any requirement which may be contrary to any law, ordinance, rule, or regulation of any public authority bearing on the performance of the Work. By submitting its proposal, the Contractor agrees that the contract documents, along with any supplementary written instructions issued by or through the Engineer that have become a part of the contract documents appear accurate, consistent and complete insofar as can be reasonably determined. If the Contractor has reported in writing any error, inconsistency, or omission to the City, has properly stopped the effected Work until instructed to proceed, and has otherwise followed the instructions of the Engineer, the Contractor shall not be liable to the City for any damage resulting from any such error, inconsistency, or omission in the contract documents. The Contractor shall not perform any portion of the Work without the contract documents, approved plans, specifications, products and data, or samples for such portion of the Work.

GC-6 STRICT COMPLIANCE

No observation, inspection, test or approval of the City or Engineer shall relieve the Contractor from its obligation to perform the Work in strict conformity with the contract documents.

GC-7 APPLICABLE LAW

All applicable State laws, City ordinances, and rules and regulations of all authorities having jurisdiction over the construction of the project shall apply to this agreement. All Work performed within the right of way of the Georgia Department of Transportation shall be in accordance with DOT regulations, policies and procedures. The Contractor shall comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as specified and the Contractor agrees to indemnify and hold harmless the City, its officers, agents and employees, as well as the Engineer, against any claim or liability arising from or based on the violation of any law, ordinance, regulation, order or decree affecting the conduct of the Work, whether occasioned by the Contractor, his agents or employees.

GC-8 PERMITS & LICENSES

All permits and licenses necessary for the Work shall be secured and paid for by the Contractor. If any permit, license or certificate expires or is revoked, terminated, or suspended as a result of any action on the part of the Contractor, the Contractor shall not be entitled to additional compensation or time.

GC-9 TAXES

The Contractor shall pay all sales, retail, occupational, service, excise, old age benefit and unemployment compensation taxes, consumer, use and other similar taxes, as well as any other taxes or duties on the materials, equipment, and labor for the Work provided by the Contractor which are legally enacted by any municipal, City, state or federal authority, department or agency at the time bids are received, whether or not yet effective. The Contractor shall maintain records pertaining to such taxes and levies as well as payment thereof and shall make the same available to the City at all reasonable times for inspection and copying.

GC-10 DELINQUENT CONTRACTORS

The City shall not pay any claim, debt, demand or account whatsoever to any person, firm or corporation who is in arrears to the County or City for taxes. The City shall be entitled to a counterclaim and offset for any such debt in the amount of taxes in arrears, and no assignment or transfer of such debt after the taxes become due shall affect the right of the City to offset any taxes owed against said debt.

GC-11 LIEN WAIVERS

The Contractor shall furnish the City with evidence that all persons who have performed Work or furnished materials pursuant to this agreement have been paid in full prior to submitting its demand for final payment pursuant to this agreement. In the event that such evidence is not furnished, the City may retain sufficient sums necessary to meet all lawful claims of such laborers and materialmen. The City assumes no obligation nor in any way undertakes to pay such lawful claims from any funds due or that may become due to the Contractor.

GC-12 MEASUREMENT

All items of Work to be paid for per unit of measurement shall be measured and certified by the Engineer.

GC-13 ASSIGNMENT

The Contractor shall not assign any portion of this agreement or moneys due therefrom without the prior written consent of the City. The Contractor shall retain personal control and shall provide personal attention to the fulfillment of its obligations pursuant to this agreement.

GC-14 FOREIGN CONTRACTORS

In the event that the Contractor is a foreign corporation, partnership, or sole proprietorship, the Contractor hereby irrevocably appoints the Secretary of State of Georgia as its agent for service of all legal process for the purpose of this contract only.

GC-15 INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall, at his sole cost and expense, indemnify, defend, satisfy all judgments, and hold harmless the City, the Engineer, and their agents and employees from and against all claims, damages, actions, judgments, costs, penalties, liabilities, losses and expenses, including, but not limited to, attorney's fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, action, judgment, cost, penalty, liability, loss or expense (1) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any act or omission of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless whether such claim is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or otherwise reduce any of the rights or obligations of indemnity which would otherwise exist as to any party or person described in this agreement. In any and all claims against the City, the Engineer, or any of their agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation contained herein shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts, or other employee benefit acts.

GC-16 SUPERVISION OF WORK

The Contractor shall supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for all construction methods and procedures and shall coordinate all portions of the Work pursuant to the contract subject to the overall coordination of the Engineer. All Work pursuant to this agreement shall be performed in a skillful and workmanlike manner.



GC-17 RESPONSIBILITY FOR WORK

The Contractor shall not be relieved from the Contractor's obligations to perform the Work in accordance with the contract documents by the activities or duties of the Engineer, including inspections, tests or approvals required or performed pursuant to this agreement.

GC-18 RESPONSIBILITY FOR ACTS OF EMPLOYEES

The Contractor shall be responsible to the City for the acts and omissions of its employees, subcontractors, and agents as well as any other persons performing Work pursuant to this agreement.

GC-19 PAYMENT FOR LABOR AND MATERIALS

Unless otherwise provided in this agreement, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the execution and completion of the Work.

GC-20 DISCIPLINE ON WORK SITE

The Contractor shall enforce strict discipline and good order among its employees and subcontractors at all times during the performance of the Work. The Contractor shall not employ any subcontractor who is not skilled in the task assigned to it. The Engineer may, by written notice, require the Contractor to remove from the Work any subcontractor or employee deemed by the Engineer to be incompetent.

GC-21 HOURS OF OPERATION

All Work at the construction site shall be performed during regular business hours, except upon the Engineer's prior written consent to other Work hours.

GC-22 FAMILIARITY WITH WORK CONDITIONS

The Contractor shall take all steps necessary to ascertain the nature and location of the Work and the general and local conditions which may affect the Work or the cost thereof. The Contractor's failure to fully acquaint itself with the conditions which may affect the Work, including, but not limited to conditions relating to transportation, handling, storage of materials, availability of labor, water, roads, weather, topographic and subsurface conditions, other separate contracts to be entered into by the City relating to the project which may affect the Work of the Contractor, applicable provisions of law, and the character and availability of equipment and facilities necessary prior to and during the performance of the Work shall not relieve the Contractor of its responsibilities pursuant to this agreement and shall not constitute a basis for an equitable adjustment of the contract terms. The City assumes no responsibility for any understandings or representations concerning conditions of the Work made by any of its officers, agents, or employees prior to the execution of this agreement.

GC-23 RIGHT OF ENTRY

The City reserves the right to enter the site of the Work by such agent as it may elect for the purpose of inspecting the Work or installing such collateral Work as the City may desire.

GC-24 NOTICES

Any notice, order, instruction, claim or other written communication required pursuant to this agreement shall be deemed to have been delivered or received as follows:

- (1) Upon personal delivery to the Contractor, its authorized representative, or the Engineer on behalf of the City. Personal delivery may be accomplished by in-person hand delivery or bona fide overnight express service.
- (2) Three days after depositing in the United States mail a certified letter addressed to the Contractor, the City, or the Engineer. For purposes of mailed notices, the City's mailing address shall be 92 North Alexander Street, Toccoa, GA 30577. The Contractor's mailing address shall be the address stated in its proposal, and the Engineer's mailing address shall be its address listed in the Notice to Begin Work.

GC-25 SAFETY

The Contractor shall take all reasonable precautions for the safety of all persons and property associated with the Work, and the Contractor shall erect and maintain, as required by existing conditions and the progress of the Work, all reasonable safeguards for the safety and protection of persons in the vicinity of the project.

GC-26 BLASTING AND EXCAVATION

The Contractor acknowledges that it is fully aware of the contents and requirements of O.C.G.A. §§ 25-9-1 through 25-9-12 concerning blasting and excavation near underground gas pipes and facilities and shall fully comply therewith.

GC-27 HIGH VOLTAGE LINES

The Contractor acknowledges that it is fully aware of the contents and requirements O.C.G.A. §§ 46-3-30 through 46-3-39 concerning safeguards against contact with high voltage lines, and the Contractor shall fully comply with said provisions.

GC-28 SCAFFOLDING AND STAGING

The Contractor acknowledges that it is the person responsible for employing and directing others to perform labor within the meaning of O.C.G.A. § 34-1-1 and agrees to comply with said provisions.

GC-29 CLEAN-UP

The Contractor shall clean up all refuse, rubbish, scrap materials, and debris caused by its operations to the end that the site of the Work shall present a neat, orderly and workmanlike appearance at all times.

GC-30 PROTECTION OF WORK

The Contractor shall be responsible for maintenance and protection of the Work until final completion of this agreement and acceptance of the Work as defined herein. Any portion of the Work suffering injury, damage or loss shall be considered defective and shall be corrected or replaced by the Contractor without additional cost to the City.

GC-31 REJECTED WORK

The Contractor shall promptly remove from the project all Work rejected by the Engineer for failure to comply with the contract documents and the Contractor shall promptly replace and re-execute the Work in accordance with the contract documents and without expense to the City. The Contractor shall also bear the expense of making good all Work of other Contractors destroyed or damaged by such removal or replacement.

GC-32 DEFECTIVE WORK

If the Contractor defaults or neglects to carry out any portion of the Work in accordance with the contract documents, and fails within three days after receipt of written notice from the City or the Engineer to commence and continue correction of such default or neglect with diligence and promptness, the City or the Engineer may, after three days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the City may have, make good such deficiencies and complete all or any portion of any Work through such means as the City may select, including the use of a new Contractor. In such case, an appropriate change order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies. In the event the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the City on demand.

GC-33 NEW MATERIALS

The Contractor warrants to the City that all materials and equipment furnished under this contract will be new unless otherwise specified, and the Contractor further warrants that all Work will be of good quality, free from faults and defects, and in conformance with the contract documents. The warranty set forth in this paragraph shall survive final acceptance of the Work.

GC-34 CONTRACTOR'S WARRANTY

If within one year after the date of substantial completion and final acceptance of the Work by the City, or within such longer period of time as may be prescribed by law or by the term of any applicable special warranty required by the contract documents, any of the Work is found to be defective or not in accordance with the contract documents, the Contractor shall correct such Work promptly after receipt of written notice from the City to do so. This obligation shall survive both final payment for the Work and termination of the contract.

GC-35 ASSIGNMENT OF MANUFACTURERS' WARRANTIES

Without limiting the responsibility or liability of the Contractor pursuant to this agreement, all warranties given by manufacturers on materials or equipment incorporated in the Work are hereby assigned by the Contractor to the City. If requested, the Contractor shall execute formal assignments of said manufacturer's warranties to the City. All such warranties shall be directly enforceable by the City.

GC-36 WARRANTIES IMPLIED BY LAW

The warranties contained in this agreement, as well as those warranties implied by law, shall be deemed cumulative and shall not be deemed alternative or exclusive. No one or more of the warranties contained herein shall be deemed to alter or limit any other.

GC-37 STOP WORK ORDERS

In the event that the Contractor fails to correct defective Work as required by the contract documents or fails to carry out the Work in accordance with contract documents, the City, or the Engineer, in writing, may order the Contractor to stop Work until the cause for such order has been eliminated. This right of the City or Engineer to stop Work shall not give rise to any duty on the part of the City or the Engineer to execute this right for the benefit of the Contractor or for any other person or entity.

GC-38 TERMINATION FOR CAUSE

If the Contractor is adjudged bankrupt, makes a general assignment for the benefit of creditors, suffers the appointment of a receiver on account of its insolvency, or fails to supply sufficient properly skilled Workers, materials, fails to make prompt payment to subcontractors or materialmen, disregards laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction, or is otherwise guilty of a material violation of this agreement and fails within seven days after receipt of written notice to commence and continue correction of such default, neglect, or violation with diligence and promptness, the City may, after seven days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the City may have, terminate the employment of the Contractor and take possession of the site as well as all materials, equipment, tools, construction equipment and machinery thereon. The City may finish the Work by whatever methods the City deems expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the contract price exceeds the cost of completing the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the City on demand. This obligation for payment shall survive the termination of the contract. Termination of this agreement pursuant to this paragraph may result in disqualification of the Contractor from bidding on future City contracts.

GC-39 TERMINATION FOR CONVENIENCE

The City may, at any time upon 30 days written notice to the Contractor, terminate the whole or any portion of the Work for the convenience of the City. Said termination shall be without prejudice to any right or remedy of the City provided herein. In addition, in the event this agreement has been terminated due to the default of the Contractor, and if it is later determined that the Contractor was not in default pursuant to the provisions of this agreement at the time of termination, then such termination shall be considered a termination for convenience pursuant to this paragraph.

GC-40 TERMINATION FOR CONVENIENCE - PAYMENT

In the event that the City terminates this agreement for the convenience of the City, the City shall only be liable to the Contractor for those costs reimbursable to the Contractor plus a mark-up of ten percent on the actual fully accounted cost recovered pursuant to this paragraph. In the event that it appears that the Contractor would have sustained a loss on the entire contract had it been completed, no profit shall be included or allowed hereunder and an appropriate adjustment shall be made reducing the amount of settlement to reflect the indicated rate of loss. In the event of termination for the convenience of the City, the City shall pay the Contractor the following amounts determined by the Engineer:

- A. An amount for supplies, services, or property accepted by the City for which payment has not previously been made. The price to be paid for these items shall be equivalent to the aggregate price for such-supplies or services computed in accordance with the price specified in this agreement appropriately adjusted for any saving of freight or other charges; and
- B. The total of:
- (1) The costs incurred in the performance of the Work terminated, including initial costs and preparatory expenses allocable thereto, but exclusive of any costs attributable to supplies or services previously paid;
  - (2) The costs of settling and paying claims arising pursuant to the termination of the Work under said contracts or orders which are properly chargeable to the terminated portion of the contract (exclusive of the amounts paid or payable on account of completed items or equipment delivered or services furnished by a subcontractor or vendor prior to the effective date of the notice of termination, which amounts shall be included in the costs payable pursuant to (A); and
  - (3) The reasonable costs of settlement, including accounting, legal, clerical, and other expenses reasonable and necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the contract and for the termination and settlement of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to this agreement.

#### GC-41 TERMINATION FOR CONVENIENCE - PAYMENT LIMITATIONS

In the event of termination for the convenience of the City, the total sum to be paid to the Contractor shall not exceed the contract price as reduced by the amount of payments otherwise made, by the contract price for Work not terminated, and as otherwise permitted by the contract. Except for normal spoilage, and except to the extent that the City shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor the fair value, as determined by the Engineer, of property which is destroyed, lost, stolen or damaged so as to become undeliverable to the City or to another buyer.

#### GC-42 COST TO CURE

If the City terminates the whole or any part of the Work pursuant to this agreement, then the City may procure upon such terms and in such manner as the Engineer may deem appropriate, supplies or services similar to those so terminated, and the Contractor shall be liable to the City for any excess costs for such similar supplies or services. The Contractor shall continue the performance of this agreement to the extent not terminated hereunder.

GC-43 ATTORNEY'S FEES

Should the Contractor default pursuant to any of the provisions of this agreement, the Contractor and its surety shall pay to the City such reasonable attorney's fees as the City may expend as a result thereof and all costs, expenses, and filing fees incidental thereto.

GC-44 CONTRACTOR'S RESPONSIBILITIES UPON TERMINATION

After receipt of a notice of termination from the City, and except as otherwise directed by the Engineer, the Contractor shall:

1. Stop Work under the contract on the date and to the extent specified in the notice of termination;
2. Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the Work under the agreement as is not terminated;
3. Terminate all orders and subcontracts to the extent that they relate to the performance of Work terminated by the notice of termination;
4. Assign to the City in the manner, at the times, and to the extent directed by the Engineer, all of the rights, title and interest of the Contractor under the orders and subcontracts so terminated, in which case the City shall have the right, at its discretion, to settle or pay any and all claims arising out of the termination of such orders or subcontracts;
5. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the Engineer, to the extent the Engineer may require, which approval or ratification shall be final for all purposes;
6. Transfer title and deliver to the entity or entities designated by the City, in the manner, at the times, and to the extent, if any, directed by the Engineer, and to the extent specifically produced or specifically acquired by the Contractor for the performance of such portion of the Work as has been terminated:
  - (a) The fabricated or unfabricated parts, Work, and progress, partially completed supplies, and equipment, materials, parts, tools, dyes, jigs, and other fixtures, completed Work, supplies, and other material produced as a part of or acquired in connection with the performance of the Work terminated by the notice of termination; and
  - (b) The completed or partially completed plans, drawings, information, and other property to the Work.

7. Use its best efforts to sell in the manner, at the times, to the extent, and at the prices directed or authorized by the Engineer, any property described in Section 6 of this paragraph, provided, however, that the Contractor shall not be, required to extend credit to any buyer and further provided that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the City to the Contractor pursuant to this agreement.
8. Complete performance of such part of the Work as shall not have been terminated by the notice of termination; and
9. Take such action as may be necessary, or as the Engineer may direct, for the protection and preservation of the property related to the agreement which is in the possession of the Contractor and in which the City has or may acquire an interest.

#### GC-45 RECORDS

The Contractor shall preserve and make available to the City all of its records, books, documents and other evidence bearing on the costs and expenses of the Contractor and any subcontractor pursuant to this agreement upon three days advance notice to the Contractor.

#### GC-46 DEDUCTIONS

In arriving at any amount due the Contractor pursuant to the terms of this agreement, there shall be deducted all liquidated damages, advance payments made to the Contractor applicable to the termination portion of the contract, the amount of any claim which the City may have against the Contractor, the amount determined by the Engineer to be necessary to protect the City against loss due to outstanding potential liens or claims, and the agreed price of any materials acquired or sold by the Contractor and not otherwise recovered by or credited to the City.

#### GC-47 REIMBURSEMENT OF THE CITY

In the event of termination, the Contractor shall refund to the City any amount paid by the City to the Contractor in excess of the costs reimbursable to the Contractor.

#### GC-48 TERMINATION FOR CONVENIENCE – DELAY

The Contractor shall be entitled to only those damages and that relief from termination by the City as specifically set forth in this agreement. The City or the Engineer may issue a written order requiring the Contractor to suspend, delay or interrupt all or any part of the Work for such period of time as the City may determine to be appropriate for the convenience of the City. If the performance of the Work is interrupted for an unreasonable period of time by an act of the City or Engineer in the administration of this agreement, an equitable adjustment shall be made for any increase in the Contractor's costs of performance and any increase in the time required for performance of the Work necessarily caused by the unreasonable suspension, delay, or interruption. Any equitable adjustment shall be reduced to writing and shall constitute a modification to this agreement. In no event, however, shall an equitable adjustment be made to



the extent that performance of this agreement would have been suspended, delayed or interrupted by any other cause, including the fault or negligence of the Contractor. No claim for an equitable adjustment pursuant to this paragraph shall be permitted before the Contractor shall have notified the Engineer in writing of the act or failure to act involved, and no claim shall be allowed unless asserted in writing to the Engineer within ten days after the termination of such suspension, delay or interruption.

#### GC-49 COMMENCEMENT AND DURATION OF WORK

The Contractor shall commence Work pursuant to this agreement within ten days of mailing or delivery of written notice to proceed by the City. The Contractor shall diligently prosecute the Work to completion within the time specified therefore. The capacity of the Contractor's construction and manufacturing equipment and plan, sequence and method of operation and forces employed, including management and supervisory personnel, shall be such as to insure completion of the Work within the specified time. The Contractor and City hereby agree that the contract time for completion of the Work is reasonable taking into consideration the average climatic conditions prevailing in the locality of the Work.

#### GC-50 TIME OF THE ESSENCE

All time limits stated in this agreement are of the essence of this contract.

#### OC-51 IMPACT DAMAGES

Except as specifically provided pursuant to a stop Work order or change order, the Contractor shall not be entitled to payment or compensation of any kind from the City for direct or indirect or impact damages including, but not limited to, costs of acceleration arising because of delay, disruption, interference or hindrance from any cause whatsoever whether such delay, disruption, interference or hindrance is reasonable or unreasonable, foreseeable or unforeseeable, or avoidable, provided, however, that this provision shall not preclude the recovery of damages by the Contractor for hindrances or delays due solely to fraud or bad faith on the part of the City, its agents or employees. The Contractor shall be entitled only to extensions in the time required for performance of the Work as specifically provided in the contract.

#### GC-52 DELAY

The Contractor may be entitled to an extension of the contract time, but not an increase in the contract price, for delays arising from unforeseeable causes beyond the control and without the fault or negligence of the Contractor or its subcontractors for labor strikes, acts of God, acts of the public enemy, acts of the state, federal or local government in its sovereign capacity, by acts of another separate contractor, or by an act of neglect of the City with the Engineer.

GC-53 INCLEMENT WEATHER

The Contractor shall not be entitled to an extension of the contract time due to normal inclement weather. Unless the Contractor can substantiate to the satisfaction of the Engineer that there was greater than normal inclement weather considering the full term of the contract using a ten year average of accumulated mean values for climatological data compiled by the U.S. Department of Commerce for Atlanta, Georgia and that such greater than normal inclement weather actually delayed the Work, the Contractor shall not be entitled to an extension of time therefore.

GC-54 NOTICE OF DELAY

The Contractor shall not receive an extension of time unless a notice of a claim is filed with the City and the Engineer within ten days of the first instance of such delay, disruption, interference or hindrance and a written statement of the claim is filed with the Engineer and the City within 20 days of the first such instance. In the event that the Contractor fails to comply with this provision, it waives any claim which it may have for an extension of time pursuant to this agreement.

GC-55 NOTICE OF DELAY - CONTENTS

The notice of delay referenced in the preceding paragraph shall include specific information concerning the nature of the delay, the date of commencement of the delay, the construction activities affected by the delay, the person or organization responsible for the delay, the anticipated extent of the delay, and any recommended action to avoid or minimize the delay.

GC-56 PROGRESS OF WORK

To the extent that the Contractor is entitled to additional compensation for delay, an absolute condition precedent to such entitlement shall be in strict compliance with all requirements and procedures for entitlement to an extension of time herein. If the Work actually in place falls behind the currently updated and approved project network schedule, and it becomes apparent from the current schedule that Work will not be completed within the contract time, the Contractor agrees that it will, as necessary, or as directed by the Engineer, take action at no additional cost to the City to improve the progress of the Work, including increasing manpower, increasing the number of Working hours per shift or shifts per Working day, increasing the amount of equipment at the site, and any other measure reasonably required to complete the Work in a timely fashion.

GC-57 DILIGENCE

The Contractor's failure to substantially comply with the requirements of the preceding paragraph may be grounds for determination by the City or Engineer that the Contractor is failing to prosecute the Work with such diligence as will insure its completion within the time specified. In such event, the City shall have the right to furnish such additional labor and materials as may be required to comply with the schedule after 48 hours written notice to the Contractor, and the Contractor shall be liable for such costs incurred by the City.

GC-58 SET-OFFS

Any monies due to the City pursuant to the acceleration provisions of this agreement may be deducted by the City against monies due from the City to the Contractor.

GC-59 ACCELERATION - REMEDIES

The remedies of the City concerning acceleration are in addition to and without prejudice to all of the rights and remedies of the City at law, in equity, or contained in this agreement.

GC-60 TITLE TO MATERIALS

No materials or supplies shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sales contract or other agreement by which any interest is retained by the seller. The Contractor hereby warrants that it has good and marketable title to all materials and supplies used by it in the Work, and the Contractor further warrants that all materials and supplies shall be free from all liens, claims, or encumbrances at the time of incorporation in the Work.

GC-61 INSPECTION OF MATERIALS

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards and in accordance with the requirements of the contract documents. Additional tests performed after the rejection of materials or equipment shall be at the Contractor's expense.

GC-62 ENGINEER'S PRESENCE DURING TESTING

All tests performed by the Contractor shall be witnessed by the Engineer unless the requirement therefore is waived in writing. The Engineer may perform additional tests on materials previously tested by the Contractor, and the Contractor shall furnish samples for this purpose as requested.

GC-63 MATERIALS INCORPORATED IN WORK

The Contractor shall furnish all materials and equipment to be incorporated in the Work. All such materials or equipment shall be new and of the highest quality available. Manufactured materials and equipment shall be obtained from sources which are currently manufacturing such materials, except as otherwise specifically approved by the Engineer.

GC-64 STORAGE OF MATERIALS

Materials and equipment to be incorporated in the Work shall be stored in such a manner as to preserve their quality and fitness for the Work and to facilitate inspection.

GC-65 PAYROLL REPORTS

The Contractor shall not be required to furnish weekly payroll reports to the Engineer on this project.

GC-66 CONTRACTORS' REPRESENTATIVE

Before beginning Work, the Contractor shall notify the Engineer in writing of one person within its organization who shall have complete authority to supervise the Work, receive orders from the Engineer, and represent the Contractor in all matters arising pursuant to this agreement. The Contractor shall not remove its representative without first designating in writing a new representative. The Contractor's representative shall normally be present at or about the site of Work while the Work is in progress. When neither the Contractor nor its representative is present at the Worksite, the superintendent, foreman, or other employee in charge of the Work shall be an authorized representative of the Contractor.

GC-67 SPECIALTY SUB-CONTRACTORS

The Contractor may utilize the services of specialty subcontractors on those parts of the project which, under normal contracting practices, are performed by specialty subcontractors. Neither the Contractor nor any subcontractor shall award Work to any subcontractor without the prior written consent of the City. The Contractor shall not award more than seventy-five percent of the Work to subcontractors.

GC-68 INSPECTION BY ENGINEERS

All Work pursuant to this agreement shall be subject to inspection by the Engineer for conformity with contract drawings and specifications. The Contractor shall give the Engineer reasonable advance notice of operations requiring, special inspection of a portion of the Work.

GC-69 WORK COVERED PRIOR TO ENGINEER'S INSPECTION

In the event that Work is covered or completed without the approval of the Engineer, and such approval is required by the specifications or required in advance by the Engineer, the Contractor shall bear all costs involved in inspection notwithstanding conformance of such portion of the Work to the contract drawings and specifications.

GC-70 ENGINEER'S AUTHORITY

The Engineer shall have the authority to decide all questions concerning interpretation and fulfillment of contract requirements, including, without limitation, all questions concerning the prosecution, progress, quality and acceptability of the Work. Any oral decision or instruction of the Engineer shall be confirmed in writing. All communications between the City and the Contractor shall be made through the Engineer. The Contractor shall submit to the Engineer a complete schedule of values of various portions of the Work, including quantities and unit prices, aggregating the contract price. The schedule shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Each item in the schedule of values shall include its proper share of overhead and profit. The schedule of values, when approved by the Engineer, shall be used only as a basis for the Contractor's monthly request for payment and shall not be used for additions to or deductions from the contract amount.

GC-71 PROGRESS ESTIMATES

The Contractor shall also prepare a written report for the Engineer's approval, on City forms of the total amount of value of Work performed to the date of submission. No progress estimate or payment shall be considered an approval or acceptance of any Work performed, and all estimates and payments shall be subject to correction in subsequent estimates. Progress payments shall be made for all completed activities and for suitably stored materials.

GC-72 PROGRESS PAYMENTS

Upon completion of each monthly estimate of Work performed and materials furnished, the Engineer shall recommend payment to the Contractor for the estimated value of such Work, materials, and equipment, less the amount of all prior payments and all liquidated damages. The Contractor will be paid 100 percent, less retainage, of the cost of materials received and properly stored but not incorporated into the Work. Payments for materials or equipment stored on the site shall be conditioned upon submission by the Contractor of bills of sale to establish the City's title to such materials or equipment. No progress estimate or payment need be made when, in the Engineer's judgment, the increment in the estimated value of Work performed and materials furnished since the preceding estimate is less than \$10,000.

GC-73 TIME OF PAYMENT

The Contractor will be paid on or before the 25th day following receipt of an approved estimate. When the contractor has performed in accordance with the provisions of this Agreement, the City shall pay to the contractor, within 30 days of receipt by the City of any payment request based upon Work completed or service provided pursuant to the contract, the sum so requested, less the retainage stated in this Agreement, if any. In the event that the City fails to pay the contractor within 60 days of the City's receipt of a pay request based upon Work completed or service provided pursuant to the contract, the City shall pay the Contractor interest at the rate of 1/2 percent per month or pro rata fraction thereof beginning the 61st day following the City's receipt of the pay request. The contractor's acceptance of progress payments or final payment shall release all claims for interest on said payments. The provisions of this agreement are intended to supersede all provisions of the Georgia Prompt Pay Act as provided by law.

GC-74 RETAINAGE

The City shall retain from each progress payment ten percent of the estimated value of the Work performed until the progress payments, including retainage, total 50 percent of the contract price. Thereafter, no further retainage shall be withheld so long as the Contractor is making satisfactory progress to insure completion of the Work within the time specified therefore. The City may reinstate the ten percent retainage, in the event the Engineer determines that the Contractor is not making satisfactory progress to complete the Work within the time specified in this agreement or in the event that the Engineer provides a specific cause for such withholding.

GC-75 PAYMENT OF SUBCONTRACTORS

The Contractor shall promptly pay each subcontractor upon the receipt of payment from the City. Such payment shall be made from the amount paid to the Contractor pursuant to the subcontractor's Work. The Contractor shall also maintain the records of the percentage retained from payments to the Contractor pursuant to such subcontractor's Work. The Contractor shall procure agreements from each subcontractor requiring each subcontractor to pay their subcontractors, agents and employees in a similar manner.

GC-76 CITY'S RESPONSIBILITIES TO SUBCONTRACTORS

Neither the City nor the Engineer shall have any obligation to pay any subcontractor except as otherwise required by law.

GC-77 PROGRESS PAYMENTS - ACCEPTANCE OF WORK

Certification of progress payments, as well as the actual payment thereof, shall not constitute the City's acceptance of Work performed pursuant to this agreement.

GC-78 PAYMENTS IN TRUST

All sums paid to the Contractor pursuant to this agreement are hereby declared to constitute trust funds in the hands of the contractor to be applied first to the payment of claims of subcontractors, laborers, and suppliers arising out of the Work, to claims for utilities furnished and taxes imposed, and to the payment of premiums on surety and other bonds and on insurance for any other application.

GC-79 JOINT PAYMENTS

The City reserves the right to issue any progress payment or final payment by check jointly to the Contractor and any subcontractor or supplier.

GC-80 RIGHT TO WITHHOLD PAYMENT

The Engineer may decline to approve payment and may withhold payment in whole or in part to the extent reasonable and necessary to protect the City against loss due to defective Work, probable or actual third party claims, the Contractor's failure to pay subcontractors or material men, reasonable evidence that the Work will not be completed within the contract time or contract price or damage to the City or any other contractor on the project.

GC-81 CERTIFICATE OF-SUBSTANTIAL COMPLETION

Upon the Contractor's submission of a request for a certificate of substantial completion, the Engineer shall inspect the Work and determine whether the Work is substantially complete. If the Work is substantially complete, the Engineer shall issue a certificate of substantial completion of the Work which shall establish the date of substantial completion, shall state the responsibilities of the City and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall complete the items submitted by the Contractor as requiring correction or further Work. The certificate of substantial completion of the Work shall be submitted to the City and the Contractor for their written acceptance of the responsibilities assigned to them pursuant to such certificate.

GC-82 FINAL PAYMENT

Upon substantial completion of the Work and upon application by the Contractor and approval by the Engineer, the City shall make payment reflecting adjustments and retainage for the Work as provided in this agreement.

GC-83 COMMENCEMENT OF WARRANTIES

Warranties required by this agreement shall commence on the date of final completion of the project unless otherwise provided in the certificate of substantial completion.

GC-84 FINAL PAYMENT - WAIVER OF CLAIMS

The acceptance of the substantial completion payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of application for payment at substantial, completion and except for the retainage sums due at final acceptance. Following the Engineer's issuance of the certificate of substantial completion and the Contractor's completion of the Work pursuant to this agreement, the Contractor shall forward to the Engineer a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Engineer a final application for payment. When the Engineer finds the Work acceptable and determines that the contract has been fully performed, the Engineer shall issue a certificate for payment which shall approve final payment to the Contractor.

GC-85 DOCUMENTATION OF COMPLETION OF WORK

Neither the final payment nor the remaining retainage shall become due until the Contractor submits the following documents to the Engineer:

- A. An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work have been paid other otherwise satisfied;
- B. The surety's consent to final payment; and
- C. Any other data reasonably required by the City or Engineer establishing payment or satisfaction of all such obligations, including releases, waivers of liens, and documents of satisfaction of debts.

In the event that a subcontractor refuses to furnish a release or waiver as required by the City or Engineer, the Contractor may furnish a bond satisfactory to the City to indemnify the City against such loss. In the event that any lien or indebtedness remains unsatisfied after all payments are made, the contractor shall refund to the City all moneys that the City may become compelled to pay in discharging such lien or other indebtedness, including all costs and reasonable attorney's fees.

GC-86 GOVERNING LAW

Each and every provision of this agreement shall be construed in accordance with and governed by Georgia law. The parties acknowledge that this contract is executed in Stephens County, Georgia and that the contract is to be performed in Stephens County, Georgia. Each party hereby consents to the Stephens Superior Court's sole jurisdiction over any dispute which arises as a result of the execution or performance of this agreement, and each party hereby waives any and all objections to venue in the Stephens Superior Court.



GC-87 CHANGES AND EXTRA WORKGC-87.1 AUTHORITY FOR CHANGES

The City may make changes in the Drawings or Specifications and in the quantities of Work to be done under the Contract.

GC-87.2 CHANGE ORDERS

Without invalidating the Contract, the City may at any time or from time to time, by written order, order additions, deletions, or revisions in the Work. These will be authorized by Change Orders. Upon receipt of the Change Order, Contractor shall promptly proceed with the Work involved. If any price or scope of the Work or an extension or shortening of the Contract Time is involved, an equitable adjustment will be made within the Change Order. In the event the contract price is increased by Change Order, the penal amount of the Payment and Performance Bonds shall be increased as provided for in Section GC-15. All changes in the Work authorized by Change Order shall be performed under the applicable Conditions of the Contract Documents.

GC-87.3 WRITTEN NOTICE

The City may, at the request of the Contractor, issue interpretations, clarifications and other instructions as to the intent of the Contract Documents, in the form of Written Notices. The City may also, at any time, make changes in the details of the Work by issuance of a Written Notice. Upon receipt of such a Written Notice containing interpretations, clarifications and other instructions, Contractor shall proceed with the Work and comply with the Written Notice unless Contractor believes that such Written Notice entitles him to a Change in Contract Price or Time or both.

Should Contractor believe that such Written Notice entitles him to change in Contract Price or Time, or both, he shall give the City notice in writing thereof within seven (7) days after receipt of the Written Notice. Thereafter within thirty (30) days, Contractor shall document the basis for the change in Contract Price or Time. The City shall render a timely, written decision on the Contractor's request for a change in Contract Price or Time. Should the City determine that the Contractor is not entitled to a change in Contract Time or Price, the Contractor shall proceed as directed upon receipt of the City's decision. Failure to proceed shall constitute a breach of Contract and shall be a cause for the termination of the Contract.

Request for a Change Order arising out of a Written Notice will not be considered without the attachment thereto of a copy of the referenced Written Notice. No claim by Contractor will be allowed if asserted after Final Payment under this Contract.

GC-87.4 EXTRA WORK

Extra Work consists of new and unforeseen Work determined by the City not to be covered by any of the various items for which there is a bid price or by combination of such items.

GC-87.5 VARIATION IN QUANTITIES

Wherever the estimated quantities of Work to be done and materials to be furnished under this Contract are shown in any of the documents including the Proposal, they are given for use in comparing bids and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the City to complete the Work contemplated by the Contract, and such increase or diminution shall in no way vitiate this Contract, nor shall any such increase or diminution give cause for claims or liability for damages.

GC-88 CHANGE ORDERSQC-88.1 GENERAL

The Contract Price may only be changed by a Written Change Order. Each change will be set forth in a Change Order prepared by the City and approved by City. Change Orders will specify (a) all additional Work to be done and Work to be omitted, if any, in connection with the change; (b) the basis of compensation to the Contractor for additional or omitted Work; and (c) any adjustment of the time of completion of the Work. If the City determines that a change requiring additional Work will cause, delay in completion of Work, he will grant an equitable time extension for the changed Work, or a subsequent Change Order may be issued at such time as the extent of such delay can be determined.

Upon receipt of a Change Order, Contractor shall comply therewith and perform each item of Work set forth therein, furnishing all labor, material, and equipment necessary therefore, in the same manner as if such Work were originally included in the Contract. In the absence of a Change Order, Contractor shall not be entitled to payment or an extension of the time of completion on account of any changes made.

GC-88.2 METHODS OF PAYMENT

The value of any Work covered by a Change Order or any claim for an increase or decrease in the Contract Price shall be determined by the following method which is most advantageous to City, as determined by the City.

- A. Where the Work involved is covered by unit prices contained in Contract Documents, by application of unit prices to the quantities of the items involved.
- B. By mutual acceptance of a lump sum, based on a detailed breakdown of anticipated costs plus Contractor's fee for overhead, small tools, and profit.
- C. On the basis of the actual cost of the Work plus a Contractor's fee for overhead, small tools and profit. This method of payment is herein referred to as force account Work. Contractor's fee for force account Work performed by his own forces shall be twenty percent (20%) for direct labor and payroll burdens; five percent (5%) for all purchased material; and Contractor's fee for subcontracted Work shall be as defined hereinafter.

#### GC-88.3 LUMP SUM CHANGE ORDER WORK

Contractor shall prepare an estimate of all extra and deleted Work as described by Written Notice, using established unit prices where they are stated in the Bidding Documents. Estimates for labor, bonds, insurance, materials, and equipment required shall otherwise be based on the provisions set forth hereinafter.

#### GC-88.4 FORCE ACCOUNT WORK

When authorized by a Change Order, Contractor may perform Work on a force account basis and will be paid actual costs and a fee for properly allocated charges which may include labor, bond premium, supplies and materials, equipment and subcontract billings, incurred in the performance of such force account Work. as more particularly described below:

- A. Labor: For all labor and for foremen in direct charge of the specific operations, Contractor shall receive the actual rate of wage in effect at the time the force account Work is performed for each and every hour that said laborer, and foreman, are actually engaged in such Work. Said agreed rate shall be no higher than that regularly paid the employee. A foreman shall not be used where there are fewer than two (2) laborers employed, except with the written consent of the City. Contractor shall receive the actual costs paid to or in behalf of Workmen, by reason of fringe benefits, including but not limited to Social Security contribution, unemployment, excise and payroll taxes, Workmen's compensation, health and retirement benefits, sick leave, vacation and holiday pay. Expenses of Working after hours, on holidays, or on Saturdays and Sundays shall be included to the extent authorized by the City. Subsistence and travel allowance where required by collective bargaining agreements shall be included.

The charges for labor shall include all classifications through foremen when engaged in the actual and direct performance of the Work. They shall not include charges for such overhead personnel as assistant superintendents, superintendents, office personnel, timekeepers, and maintenance mechanics.

- B. Bonds and Insurance: For bonds and insurance premiums or increases thereto necessitated by the force account Work, Contractor shall receive the actual cost to which

no percent shall be added. Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond and insurance.

- C. Materials: For materials accepted by the City and used as an integral part of the finished Work, Contractor shall receive the actual cost of such materials delivered on the Work, including transportation charges paid by him, exclusive of machinery rentals as hereinafter set forth.

If materials are procured by Contractor by a method which is not a direct purchase from and a direct billing by the actual supplier, the cost of such materials shall be deemed to be the lowest current wholesale price at which such materials are available in the quantities concerned and delivered to the site of the Work.

For other materials used in the construction which are not an integral part of the finished Work, such as, but not limited to, sheeting, false Work and form lumber, Contractor shall be reimbursed in the amount agreed upon by the City before such Work is begun. The salvage value of such material will be taken into consideration in determining, the amount of reimbursement.

- D. Equipment: Contractor will be paid for the use of Contractor owned or rented equipment at seventy percent (70%) of the suggested monthly rental rates listed for such equipment in the Blue Book Rental Rates for Construction Equipment (published by Equipment Guide-Book Company of Palo Alto), except as modified below, which edition shall be the latest edition in effect at the time of commencement of the force account Work. Hourly rental rates shall be calculated by dividing the listed monthly rates as modified above by 176 hours. The rental rate for equipment used in excess of eight (8) hours per day, shall be at the rate of fifty percent (50%) of the hourly rates as calculated above. The rental rates for standby equipment, when authorized by the City, shall be at the rate of fifty percent (50%) of the hourly rate for equipment in use eight (8) hours per day. No payment of rentals for standby equipment will be made for more than eight (8) hours per Working day and no payment will be made for weekend days or holidays. If it is deemed necessary by Contractor to use equipment not listed in the applicable edition of the Blue Book Rental Rates, Contractor shall furnish the necessary cost data and paid invoices to the City for its use in establishment of such rental rate(s). Equipment must be in good operating condition. The rental rates paid as above provided shall include the cost of fuel, oil, lubricants, supplies, small tools, necessary attachments, repairs and maintenance of all kinds, depreciation, storage and insurance. Equipment operators will be paid for as stipulated herein.

The rental time to be paid for equipment on the Work site shall be the time the equipment is required for the force account Work being performed. The time shall include the time required to move the equipment to the location of the force account Work and return it to the original location or to another location requiring no more time than that required to return it to its original location. Moving time will not be paid if the equipment is used at the site of the force account Work on other than such force account Work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power. No payment for loading and transporting will be

made if the equipment is used at the site of the force account Work on other than such force account Work. Compensation will not be allowed while equipment is inoperative due to breakdown.

For the use of equipment moved in on the Work and used exclusively for Work paid for on a force account basis, providing the City has agreed to said move, Contractor will be paid the equipment use rates provided for in this clause, for the cost of transporting the equipment to the location of the Work and its return to its original location, and for the cost of loading and unloading the equipment, all in accordance with the following provisions:

1. The cost of transporting equipment shall not exceed the applicable minimum established rates by the State of Georgia Public Service commission.
  2. The equipment use period shall begin at the time the equipment is unloaded at the site of the force account Work, shall include each day that the equipment is at the site of the force account Work, excluding Saturdays and Sundays and other legal holidays unless the force account Work is performed on such days, and shall terminate at the end of the day on which the City instructs Contractor to discontinue the use of such equipment. The maximum time to be paid per day will not exceed eight (8) hours unless the equipment is in operation for a longer time.
- E. Subcontract Work: Where the Change Order applies to Work being performed under a subcontract, reimbursement, including the fee for small tools, overhead and profit for the subcontractor's Work performed on a force account basis shall be computed in precisely the same manner as if performed by Contractor as indicated herein. One additional allowance of five percent (5%) of the subcontractor's total costs will be granted to Contractor for overhead and profit regardless of the tier of the subcontractor. If the subcontractor elects to contract out change order Work to a third (or lower) level contractor or supplier of purchased equipment, he shall not be entitled to fees, overhead or profit for such third (or lower) level Work or materials. The City reserves the right to direct the Contractor to contract directly with third (or lower) level subcontractors and suppliers of purchased equipment in order to avoid paying multiple fees, overhead and profit for such third (and lower level) subcontractors and suppliers of purchased equipment. If similar Work is not being performed at the Work site, and if required by City, Contractor shall obtain three (3) competitive bids for the requirements of the Change Order and the Contract Documents from Subcontractors acceptable to the City. Selection of the Subcontractor shall be subject to the approval of the City.

- F. Compensation: The compensation as set forth above shall be received by Contractor as payment in full for Work done on a force account basis. At the end of each day, Contractor's Representative and Inspector shall compare records of the Work performed including classification of all laborers, ordered on a force account basis.
- G. Statements: No payment will be made for Work performed on a force account basis until Contractor furnishes the County itemized statements of the cost of such force account Work detailed as to the following:
1. Labor - name, classification, date, daily hours, total hours, rate, and extension of each laborer and foreman.
  2. Equipment - size, type, identification number, dates, daily hours, total hours, rental rate, and extension of each unit of machinery and equipment.
  3. Materials - quantities of supplies and materials, prices, including transportation cost and extensions.
  4. Bonds and insurance premiums.
  5. Subcontract Work - force account detail as above or progress quantities and prices of unit price or lump sum subcontracts.
  6. Payments for items under paragraphs (a) to (f) inclusive, shall be conditioned upon Contractor's presentation of original receipted invoices for materials used and transportation charges. If, however, the materials used in the force account Work are not specially purchased for such Work but are taken from Contractor's stock, then in lieu of the original invoices) the statements shall contain or be accompanied by an affidavit of Contractor which shall certify that such materials were taken from his stock, that the price and transportation of the material as claimed represent actual cost.
- H. If, in the City's opinion, Contractor or any of his subcontractors, in performing force account Work, are not making efficient use of labor, material, or equipment and/or are proceeding in a manner which is expensive to the City, the City may request the Contractor to make more efficient use of labor, material and equipment. Contractor shall in good faith comply with such requests as are reasonable. If the Contractor fails to comply with such requests, the City may independently determine the reasonable cost of the Work and the Contractor will be entitled only to the reasonable cost so estimated by the City.

GC-88.5 CHANGE ORDERS LIMITED

Except as provided herein, no order, statement or conduct of the City or the Construction Program Manager shall be treated as a "Change Order" or entitle the Contractor to any adjustment hereunder of the Contract Price or Contract Time.

GC-88.6 NO WORK STOPPAGE

Nothing in this Article shall excuse the Contractor from proceeding with the Contract as changed.

GC-88.7 CONTRACT AMENDMENT

The amount payable to the Contractor under the Contract, the Contract Time, and the date required for performance of any part of the Work may be changed only by a Change Order to the Contract.

GC-89 DISAGREEMENT WITH ORDERS FOR CHANGE

Contractor's written acceptance of a Change Order or other order for changes shall constitute his final and binding agreement to the provisions thereof and a waiver of all claims in connection therewith, whether direct or consequential in nature. Should Contractor disagree with any order for changes, he may submit a notice of potential claim to the City, at such time as the order is set forth in the form of a Change Order. Disagreement with the provisions of an order for changes shall not relieve Contractor of his obligation under Clause GC-88, Change Orders.

GC-90 CHANGED CONDITIONS .

Contractor shall notify the City in writing of the following conditions, hereinafter called "changed conditions," promptly upon their discovery and before they are disturbed:

- A. Subsurface or latent physical conditions at the site of Work differing materially from those represented in this Contract; or
- B. Unknown physical conditions at the Site of the Work of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in this Contract.

The City will promptly investigate conditions of which it is so notified or conditions discovered by it which appear to be changed conditions, and will, as soon as practicable, issue appropriate orders or instructions. If the City determines that the conditions materially differ and that they will materially increase or decrease the costs of any portion of Work, it will issue a Change Order adjusting the compensation for such portion of Work.

GC-91 OPTIONAL CHANGE ORDER PROCEDURE

In the event that a change order is deemed necessary and is requested by the City, the Contractor, at his option, may elect to perform the necessary Work prior to the approval of the change order by the City Council. In such event, the Contractor shall proceed at his own risk that the City Council may not approve the change order.

Within thirty days following the Contractor's submission of a request for payment for the Change Order Work pursuant to this paragraph, the City shall initiate an agenda item requesting that the City Council approve and execute a written change order for the Work in question. During the pendency of the agenda item, the Contractor shall not be entitled to compensation for the change order Work performed.

If the City Council subsequently approves and executes the change order, the Contractor shall be paid the sum approved in the change order from funds reserved by the City for payment of anticipated and approved written change orders in conjunction with this contract pursuant to Part III of the bid with regard to this project. If the City Council rejects or fails to approve the change order, the Contractor shall not be entitled to compensation for the Work performed pursuant to the change order request.

Nothing contained in this contract shall prevent or discourage the Contractor from electing to obtain prior written approval of a change order by the City Council prior to initiation of Work pursuant to such change order.

The parties to this agreement recognize that the Contractor's election to proceed with a change order prior to Council approval of such change order will evidence the Contractor's desire to continue the project without interruption. In the event that the Contractor determines to await Council approval of a written change order, however, neither party to this agreement shall be entitled to damages, including delay damages and impact damages, as a result of the change order approval process.

The Contractor hereby acknowledges that thirty to sixty days are normally required in order to obtain the City Council's approval of a written change order. The Contractor further acknowledges that no agent or employee of the City has authority to bind the City to a contract or change order, and approval by the City Council is necessary prior to the City's entry into a valid and binding contract or change order.

The Contractor further acknowledges that the funds reserved by the City pursuant to Part III of the bid concerning this project do not form a portion of the contract price for this project. Said funds merely represent the City's effort to set aside funds from its general operating budget to pay approved written change orders arising from this project. The Contractor acknowledges that the City is not obligated to expend any or all of the amount designated in Part III of the bid for this project, and the Contractor agrees to make no claim to any such funds which remain unexpended and unauthorized after completion of this agreement.

Each party to this agreement hereby warrants that it has read and fully understands each and every provision of these general conditions to the parties' construction contract. Each party



TUGALO STREET GREENSPACE PROJECT

CPL R22.16993.00

GENERAL CONDITIONS

SECTION 00 701-29

further agrees that these general conditions form a portion of the construction contract and are hereby incorporated therein by reference.

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## 1. PART 1 - GENERAL

1.01 In the event that Section 00 701, "General Conditions for City of Toccoa Construction Contracts", does not adequately address a condition for this project, the issue shall be resolved utilizing Document A201-1987 (prepared by the American Institute of Architects) and as this section supplements, modifies, deletes or adds to the "General Conditions of the Contract for Construction, 1987 Edition". Where any article, paragraph or sub-paragraph in the General Conditions is supplemented by one of the following paragraphs, the provisions of such article, paragraph, or sub-paragraph shall remain in effect and the supplemental provisions shall be considered added thereto. Where any article, paragraph or sub-paragraph in the General Conditions is amended, voided or superseded by any of the following paragraphs, the provisions of such article, paragraph or sub-paragraph not so amended, voided or superseded shall remain in effect.

### 1.02 Index

A. Revise Index as follows:

On left side of page, replace the word "approvals" with "reviews".

### 1.03 ARTICLE 1 - CONTRACT DOCUMENTS

A. Revise sub-paragraph 1.1.7 as follows:

1.1.7 The term "Project Manual" as used in these conditions is the volume which includes the Bidding Contract Documents, the Agreement Between Owner and Contractor, the Conditions of the Contract, the Specifications, all Addenda issued prior to and all Modifications issued after execution of Contract.

B. Add subparagraph 1.1.8 as follows:

The term "review" as used herein in relation to analysis of potential substitutions for specified products and processes, completed and ongoing work, project submittals and all other project conditions and components, shall adequately imply that the responsible party has checked the product(s) or situation(s) for general compliance with the original design intent. Following such "review", the responsible party shall have the capacity to reject or accept the product(s) or situation(s) for incorporation within the project in accordance with the contract conditions.

C. Add the following sub-paragraphs 1.2.6 and 1.2.7:

- 1.2.6 In the event of a possible discrepancy in any portion of the contract documents, the Architect shall be notified in writing by the Contractor and a clarification will be issued. The Contractor assumes an obligation to bring all possible discrepancies within the Contract Documents to the Architects attention in writing for possible resolution prior to performing any construction related thereto. If the Contractor neglects to do so, all expenses related to reparations required by the Owner due to such negligence shall be borne by the Contractor. In all instances, the Architect shall be the sole interpreter of the Contract Documents.
- 1.2.7 In case of discrepancies or conflicts in the Contract Documents, the documents to hold precedence over others shall be in the following order:
- 1.2.7.1 The Owner-Contractor Agreement (including Modifications thereto)
  - 1.2.7.2 Change Orders - Those of a later date shall take precedence over those of an earlier date.
  - 1.2.7.3 Written amendments to the Contract signed by both parties - Those of a later date shall take precedence over those of an earlier date.
  - 1.2.7.4 Addenda - Those of a later date shall take precedence over those of an earlier date.
  - 1.2.7.5 Written Clarifications issued by the architect - Those of a later date shall take precedence over those of an earlier date.
  - 1.2.7.6 Supplementary Conditions
  - 1.2.7.7 General Conditions
  - 1.2.7.8 Specifications
  - 1.2.7.9 Schedules in the Specifications
  - 1.2.7.10 Schedules on the Drawings

1.2.7.11 Detail drawings - Large scale detail drawings take precedence over small scale detail drawings

1.2.7.12 Drawings, which are Dimensioned

1.2.7.13 Drawings, which are not Dimensioned

D. Add the following sub-paragraph 1.3.2:

1.3.2 The Contractor shall acquire Construction documents as follows:

1.3.2.1 The Owner shall provide the contractor 5 sets of construction documents free of charge.

1.3.2.2 Any additional or replacement sets of complete Construction Documents so required or requested by the Contractor shall be supplied and billed to the Contractor at actual cost of reproduction plus applicable shipping and handling charges.

1.3.2.3 After award of the Contract, any requirement or request by the Contractor for additional copies of selected sheets of Contract Drawing sections or pages of Specifications shall be furnished for the cost of reproduction plus applicable handling and shipping charges.

#### 1.04 ARTICLE 2 - OWNER

A. Revise sub-paragraph 2.4 as follows:

2.4.1 Fourth line from the bottom, replace the word "approval" with "review".

B. 2.4.2 “If, in the opinion of the Architect, it is evident that the Contractor has not completed or will not be able to substantially complete the work in accordance with the contract documents due to default, negligence, or failure on the part of the contractor, or their subcontractors, the Owner may issue to the Contractor a written notice to commence and continue correction of such defaults or neglect with diligence and promptness within a 48 hour period. If the Contractor fails to correct such deficiencies within the first notice period, the Owner may issue a second 48 hour written notice to the Contractor. If the Contractor within such second 48 hour period after receipt of such second notice fails to

commence and continue to correct any deficiencies, the Owner may, at its option, without prejudice, complete certain portions of the Work as may be necessary, or augment the forces of the Contractor with additional manpower as may be required to complete the work by the contracted completion date. In such case, an appropriate deductive change order shall be written, deducting from the contract, price the actual costs incurred by the Owner to complete or augment the work, including compensation for the Architect's additional services and expenses made necessary by such default, neglect, or failure. Furthermore, if payment then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. Such amounts charged to the Contractor shall be subject to the approval of the Architect. Such actions, if taken by the Owner, shall not be interpreted by the Contractor as a termination of the contract as per Paragraph 14.2, and the Contractor is to continue to carry out the work or portions of the work as may be required by the contract during this time frame."

#### 1.05 ARTICLE 3 - CONTRACTOR

A. Delete sub-paragraph 3.2.2 and add new sub-paragraph 3.2.2 as follows:

##### 3.2.2 MEASUREMENTS AND DIMENSIONS

3.2.2.1 Contractor shall check and be responsible for accuracy of all dimensions by taking measurements at the project site before ordering material or doing work dependent on accurate measurements for installation.

3.2.2.2 Contractor shall refer discrepancies between Contract Documents and Job Conditions to Architect in writing for adjustment before work affected thereby is begun.

3.2.2.3 No consideration shall be given any claim based on differences between actual dimensions and those shown on the drawings without first complying with 3.2.2.2. above.

B. Add new sub-paragraph 3.3.5 as follows:

3.3.5.1 The Contractor shall make daily reports of activities on site and shall submit copies of these reports with each monthly Application for

payment. Each daily report shall include the following information as a minimum:

- a. project name
- b. contractor
- c. date
- d. weather/temperature
- e. number of persons present for each trade working on site
- f. number of Contractor's own forces present on site
- g. equipment present on site
- h. activity and work performed on site
- i. visitors on site

C. Add the following sub-paragraph 3.4.3:

- 3.4.3 All grades, lines, levels and benchmarks for the work under this Contract shall be established and maintained by the Contractor, who shall verify all grades, lines, levels and dimensions indicated on the drawings, and shall report all discrepancies before commencing work. The Contractor shall provide and maintain well-built batter boards at corners. He shall establish and safeguard benchmarks in at least 2 widely separated places. As work progresses, he shall establish exact locations to serve as a guide to trades. Any costs of corrective measures necessitated by erroneous establishment of grades, lines, levels or benchmarks shall be paid for by the Contractor.

D. Subparagraph 3.7.2, add the following:

- 3.7.2.1 The Contractor shall file a "Notice of Commencement" on each project as required in O.C.G.A. 44-14-361.5(b) and shall post a copy of notice on the project site.

E. Add the following sub-paragraph 3.7.5:

- 3.7.5 Required permits fees, licenses, inspections, and certificates shall be carefully preserved and prominently posted during the construction period at the project for the convenient access by the various inspecting authorities.

F. Revise sub-paragraph 3.10.2 as follows:

3.10.2 Second line from the top, replace the word "approval" with "review".

G. Revise sub-paragraph 3.12.6 as follows:

3.12.6 Second line from the bottom, replace the word "approval" with "review".

H. Revise sub-paragraph 3.12.8 as follows:

3.12.8 Third and seventh line from the top, replace the word "approval" with "review".

I. Add the following sub-paragraph 3.12.12:

3.12.12 The number of shop drawings which the Contractor shall submit and, if necessary, resubmit, shall be as specified in Section 01 100, Part 1.03.J.1.f.

J. Add the following sub-paragraph 3.12.13:

3.12.13 When required by the Architect, three samples of sufficient size to indicate general visual effect shall be submitted. One set of "Reviewed" samples shall be retained at the Architect's office.

K. Add the following part 3.19:

### 3.19 PRE-CONSTRUCTION CONFERENCE

3.19.1.1 A Pre-Construction Conference shall be held within 10 calendar days following the date of the written "Notice to Proceed". The purpose of this conference is to introduce all members of the construction team, which include the Owner's Representative, the Architect's Representative, the Contractor's Project Manager and the Contractor's Superintendent, and to review and ensure all Contract Documents are completed and in compliance with all Agreements. In addition, the Contractor shall submit copies of all Preconstruction Information, as described below, for the Owner's and Architect's review prior to the preconstruction conference.

3.19.1.2 A separate schedule of values shall be submitted for each phase of the project for each major item of work included in the Contract



which defines labor, material, equipment, overhead and profit costs for each item of work.

- 3.19.1.3 A statement designating all work to be performed by the contractor's own forces shall be submitted. Submit three copies.
  - 3.19.1.4 A list of the names of all Sub-Contractors and other organizations proposed for each portion of the work shall be properly executed on AIA Document G805 - "List of Subcontractors" - and shall be submitted for Owner's and Architect's review. The list shall include a contact person and 24 hour phone number for each category of work, including the contractor, project manager and superintendent. Submit three copies.
  - 3.19.1.5 The Performance Bond for the general contractor shall be properly executed on the City of Toccoa forms included in this manual. The information submitted shall include the bond number and a letter from the bonding company stating their A.M. best rating and size for each bond. Provide one original and two copies for each bond.
  - 3.19.1.6 The Payment Bond for the general contractor shall be properly executed on the City of Toccoa forms included in this manual. The information submitted shall include the bond number and a letter from the bonding company stating their A.M. best rating and size for each bond. Provide one original and two copies for each bond.
  - 3.19.1.7 The Certificate for Insurance shall be properly executed. Submit one original and two copies.
  - 3.19.1.8 A list of the names of all suppliers of principal materials and equipment shall be submitted for review. Submit three copies.
  - 3.19.1.9 A construction CPM schedule shall be submitted for itemizing the major categories of work and indicating the critical path of the construction process. See Section 01112. Submit four copies.
- 3.19.2 In addition to submittal of the previous items, the following topics will be discussed. The General Contractor is encouraged to have all subcontractors represented at the conference:

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| 3.19.2.1  | Introduction of all attending parties  |
| 3.19.2.2  | Channels and procedures for communication shall be discussed.  |
| 3.19.2.3  | Requests for substitution shall be issued in accordance with the requirements of Part 1.03.F in Section 01 100.  |
| 3.19.2.4  | Issuance of RFP's (Requests for Proposals) by the Architect shall be addressed by the General Contractor within 7 calendar days of receipt thereof in accordance with Supplementary Conditions indicated in paragraph 7.1.5.                               |
| 3.19.2.5  | Change Order compensation shall be based on figures indicated in Supplementary Conditions amended in sub-paragraphs 7.1.6 & 7.1.7.   |
| 3.19.2.6  | Pre-construction submittals shall be issued as indicated in Supplementary Conditions, sub-paragraph 3.19.1.  |
| 3.19.2.7  | Shop drawings, samples and other project submittals shall be issued in accordance with the requirements of Specification Section 01 100.   |
| 3.19.2.8  | Job Progress Meetings shall be held weekly at the job site. One meeting per month will include a review of the Contractor's application for payment for the previous month. Unless determined otherwise, this meeting shall be held at the Owner's office. |
| 3.19.2.9  | Safety precautions and programs shall be as directed by the General Contractor in accordance with the General Conditions, Article 10, and Part 1.08 in Section 01 010.   |
| 3.19.2.10 | All mockups required by the specifications shall be acknowledged.  |
| 3.19.2.11 | Requests for time extension shall be issued in accordance with the requirements of the General and Supplementary Conditions, Section 8.3.4.  |
| 3.19.2.12 | Discrepancies and conflicts in the Contract Documents shall be resolved using the order of precedence indicated in the Supplementary Conditions, paragraph 1.2.7. In the event of a possible discrepancy in any portion of the contract documents, the     |

Architect shall be notified in writing by the Contractor and a clarification will be issued. The Contractor assumes an obligation to bring all possible discrepancies within the Contract Documents to the Architects attention in writing for possible resolution prior to performing any construction related thereto. If the Contractor neglects to do so, all expenses related to reparations required by the Owner due to such negligence shall be borne by the Contractor. In all instances, the Architect shall be the sole interpreter of the Contract Documents.

- 3.19.2.13 The Date of Substantial Completion shall be achieved and the Certificate of Substantial Completion shall be issued when the Architect determines the Contractor has substantially completed the work defined within the Contract Documents and the official final certificate of occupancy has been received. This requirement is indicated in Specification Section 01 700, Part 1.01.A.
- 3.19.2.14 Contract closeout/final payment requirements are indicated in Section 01 700, Part 1.02. Piecemeal delivery of final closeout documents and materials is unacceptable. Additional prerequisites for final acceptance are indicated in Section 01 010, Part 1.11.
- 3.19.2.15 All materials testing shall be conducted by a certified testing agency in accordance with the requirements of Section 01 400.
- 3.19.2.16 Immediately prior to Substantial Completion, the General Contractor shall prepare a comprehensive list of items to be corrected or completed (a punch list) for the Architect's review, in accordance with paragraph 9.8.2 of the General Conditions. The Architect shall then add to or delete items from the list during a Substantial Completion Inspection.
- 3.19.2.17 Permits, fees, licenses, etc. shall be addressed in accordance with the requirements of General Conditions, paragraph 3.7, all applicable Supplementary Conditions, and Part 1.10A of Section 01 010.
- 3.19.2.18 Compensation for stored materials shall be as defined in parts of the General Conditions, the Supplementary Conditions and the General Requirements of the project. Invoices for stored materials must be delivered with the applications for payment on which compensation for the stored materials has been requested.

- 3.19.2.19 A lien waiver issued by the General Contractor and each subcontractor requesting payment shall be submitted with each application for payment.

1.06 ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

A. Revise paragraph 4.2.7 as follows:

- 4.2.7 First line from the top and second line from the bottom, replace the word "approval" with "review".

B. Add the following to paragraph 4.3.7:

- 4.3.7 In connection with any claim by the Contractor against the Owner for compensation in excess of the contract price, any liability of the Owner for the Contractor's costs 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 therefore in a court of competent jurisdiction.

C. Add paragraph 4.3.8.3 as follows:

- 4.3.8.3 "The contract time shall not be extended for unforeseen events or additional work which is not associated with work indicated to be on the critical path in the original CPM construction schedule."

D. Delete Section 4.5 - Arbitration in its entirety and delete any mention of or reference to arbitration wherever found in the contract documents.

1.07 ARTICLE 7 - CHANGES IN THE WORK

A. Add new sub-paragraph 7.1.5. as follows:

- 7.1.5 The General Contractor shall issue a response in accordance with all other requirements of Article 7 contained herein no later than 7 calendar days following receipt of all requests for proposals issued by the Architect concerning proposed changes in the work.

B. Add new sub-paragraph 7.1.6. as follows:

- 7.1.6 In order to facilitate evaluation of proposals for extras or credits, all proposals shall be accompanied by a complete itemization of costs including labor, equipment, materials overhead, profit, bonds and insurance for each item. Sub-Contractor's costs shall be itemized in a similar manner. Where major cost items are Subcontracts, they shall also be itemized.

C. Add the following sub-paragraphs 7.1.7.:

- 7.1.7 The total cost or credit to the Owner for all proposed change orders shall be based upon the following:
- 7.1.7.1 All change orders reducing the Contract Sum shall be calculated by adding the actual cost of labor, equipment and materials deleted from the scope of the work. If the net cost value of a change results in a credit due from the general contractor and/or subcontractors, the credit issued shall equal the net cost not including the overhead and profit for that portion of the work.
- 7.1.7.2.1 The total markup to be charged to the owner from the general contractor for work performed with their own forces (not including subcontractors) including all overhead, profit, bonds and insurance, or all work performed which increases the Contract Sum shall not exceed 20% of the net cost of the work performed.
- 7.1.7.3 The total mark-up allowed to subcontractors for work which was performed with their own forces which increases the contract sum, including all overhead, profit, bonds and insurance, shall not exceed 20% of the net cost of the work performed.
- 7.1.7.4 The total mark-up allowed to the General Contractor for all work performed by subcontractors which increases the contract sum, including all overhead, profit, bonds and insurance, shall not exceed 7.5% of the net cost of the work performed.
- 7.1.7.5 The percentages listed above shall be applied to the net cost of the work to be performed or deleted. The "Net Cost" shall include all values for labor and materials and the rental of power tools and equipment only. In any change proposal involving both additions and deductions to the contract sum resulting in a net addition to the contract sum, overhead, profit, bonds and insurance shall be applied only to the net cost differential.

- 7.1.7.6 Among the items to be considered as overhead are all forms of insurance provided by the general contractor and subcontractors (including, but not limited to, builder's risk insurance and general liability insurance), all bond premiums, supervision, superintendents, time-keepers, clerks, watchmen, small tools, incidental job burdens, labor burden, general office expense and all other items not included in the net cost as defined in this article.

1.08 ARTICLE 8 - TIME

A. Add the following to paragraph 8.1.3:

- 8.1.3 The Owner shall be able to conduct classes without disruption or interference; move buses in and out on paved surfaces; and secure, heat, cool, light the building, and deliver food.

B. Add the following sub-paragraphs to section 8.1:

- 8.1.5 A working day is a day for which no premium pay is required of the Contractor for labor.

C. Revise sub-paragraph 8.2.2 as follows:

- 8.2.2 At the end of the first sentence add the following: "and shall begin physical work at the project site immediately after the effective date of issuance."

D. Add Sub-paragraph 8.2.4:

- 8.2.4 The Owner will require that the Contractor increase his work effort to achieve a six (6) day, ten (10) hour per day work week upon the determination that the construction progress is two (2) weeks behind the construction schedule as required by the General Conditions.

E. Add the following sub-paragraph 8.3.4:

- 8.3.4 Labor disputes in this agreement shall be defined as disputes arising out of the renewal or modification of area labor agreements to which the Contractor or his suppliers are signatory. Grievances under existing agreements, representational matters, informational picketing and other labor matters shall not constitute a basis for extension of the construction time period.

ALL requests for time extensions to the contract shall be issued in writing by the Contractor to the Architect within 21 calendar days of an event which may have caused the delay. This requirement shall be strictly enforced. All requests for time extensions to the contract received by the Architect from the Contractor after 21 days of an event which may have caused a delay shall not be recognized. The Date of Substantial Completion shall not be extended for normally expected bad weather. The Date of Substantial Completion, as defined in the Contract Documents, shall include due allowance for days on which work cannot be performed out-of-doors. Any days lost due to the weather shall be documented and verified by the Contractor. These days shall be reported by the Contractor at the job site progress meetings. Acceptable sources for documentation of rain days shall include the National Oceanic and Atmospheric Administration, the National Weather Service, The U.S. Army Corps of Engineers, The National Climatic Data Center or any other source chosen to be recognized by the Architect. For the purpose of this contract, the Contractor agrees that he may expect to lose working days due to inclement weather in accordance with the following table:

Projected mean number of days with precipitation greater than or equal to 1/10" for Toccoa, Georgia:

January 14 days	May 6 days	September 6 days
February 14 days	June 3 days	October 3 days
March 10 days	July 4 days	November 5 days
April 7 days	August 2 days	December 9 days

During the first month after the contract has been initiated, if the contract was signed after the first of the month, the number of rain days for that month shall be pro-rated an amount based on the date the contract was signed.

No changes in the contract sum shall be authorized because of adjustment of contract time due to inclement weather. No time extensions shall be allowed for high winds. No time extensions shall be allowed for days on which total precipitation volume is less than 1/10" as recorded by a source acceptable to the Architect. No time extensions shall be allowed for precipitation occurring on any Saturday, Sunday or nationally-recognized holidays during the project life. Days lost due to inclement weather shall be CUMULATIVE. If the total accumulated number of working week days (Monday through Friday) lost due to inclement weather exceeds the total accumulated number to be expected

for the same period from the previous table until the building is enclosed, the Date of Substantial Completion shall be extended by the number of calendar days needed to include the EXCESS number of days lost via change order.

The term "enclosed" shall imply that the installation of roofing material, exterior wall surface materials, fenestration (including glass), exterior doors and skylights is sufficient to allow the initiation of interior finishing operations, including, but not limited to, GpDw applications, finish floor material applications, painting and ceiling material installations. No rain days shall be recognized after the initial contractual date of substantial completion.

#### 1.09 ARTICLE 9 - PAYMENTS AND COMPLETION

A. Add the following sub-paragraph 9.2.2:

9.2.2 A schedule of values shall be prepared in a line item format.

B. Add the following sub-paragraph 9.2.3:

9.2.3 The schedule of values shall include labor, material and equipment costs as well as overhead and profit for each line item.

C. Delete sub-paragraph 9.3.1 entirely. Add new sub-paragraph 9.3.1 as follows:

9.3.1 The Contractor shall submit to the Architect, on or prior to the first day of each month, an itemized Application for Payment, notarized by a duly registered Notary Public, supported by data substantiating the Contractor's right to payment as the Owner or the Architect may require, and reflecting retainage as specified herein. The Form of Application for Payment shall be AIA Document G702, Application and Certification for Payment, supported by AIA Document G702A, Continuation Sheet. The Architect shall submit the contractors application for payment to the Owner by the eighth day of the same month. The Owner shall make payment by 5:00 P.M. on the first Friday following the fifteenth of the same month. This verbiage shall be included in the contract agreement between the Owner and the General Contractor. All Applications for Payment shall be notarized by the General Contractor.

The work shall be divided into two Phases, which shall be constructed simultaneously by a single general contractor. The contractor shall



divide the individual components of the total project into two itemized schedules of value as defined in Specification Section 01370. A single application for payment shall be submitted each month which includes each of the two schedules of value for the two phases of the project.

D. Add the following Paragraph 9.3.2.1:

- 9.3.2.1 No amounts shall be allowed for materials or equipment which are in route to the project site or Owner approved storage facility at the time the project is scheduled to be reviewed by the Architect to confirm that the amounts requested on the Application for Payment coincide with the work performed. An amount equal to 10% of the invoiced value of all stored materials approved by the Owner shall be allowed on the Application for Payment as compensation for work relating to the acquisition and storage of the materials.

Values related to the Contractor's and Subcontractor's overhead and profit for stored materials shall not be paid until the products are physically incorporated into the project.

E. Add new sub-paragraph 9.3.4 as follows:

- 9.3.4 Each Application for Payment up to and including the AFP issued at or following 50% project completion (including approved change orders) shall include a 10% retainage of all completed work and stored to date items, proof of storage in a bonded facility, invoices for all materials stored off the site indicating transfer of the property to the owner and appropriate backup data as required by the Architect to substantiate the required payment and lien waivers as required by Owner. All AFPs following 50% project completion shall include all items listed above without the retainage, except as noted below.

It shall be understood that the Owner shall make progress payments on account of the contract for 90% (10% will be retained by the Owner) of the value, based on the scheduled amounts, including Owner-approved and signed change orders, labor and materials suitably incorporated in the work and materials suitably stored, at the site thereof, as estimated by the Architect, less the aggregate of previous payments, until one half (50%) of the overall contract sum is due (including all Owner approved and signed change orders), provided that:

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1. The work is not behind schedule as determined by the Architect, based on the originally issued time scaled CPM schedule with monthly anticipated progress payment amounts submitted at or before the preconstruction meeting and,
2. The work is being performed in a satisfactory manner in compliance with the contract documents as determined by the Architect and,
3. There are no outstanding claims or liens on the property. (Contractor shall submit with each application for payment, a lien release form from each subcontractor requesting payment.)

Further payments beyond 50% of the overall contract sum shall be made in the amount of 100% of the value of the labor and materials incorporated in the work and of materials suitably stored unless:

1. The percentage of work completed falls behind the percentage required by the construction progress schedule by 10% or more or,
2. The work is being performed in an unsatisfactory manner and/or non-compliance with the contract documents as determined by the Architect or,
3. There are outstanding liens or claims on the property.
4. In which event or events, the Owner shall reinstate the 10% retainage on all periodical payments to be paid while one or more of the events continues to exist. The Contractor shall be given written notice, by the Architect, of the reinstatement of the retainage. If the Contractor's actual progress becomes more than 10% behind the Contractor's anticipated progress, as previously described, the Owner may direct the withholding of payments to the contractor in amounts equal to the percentage behind the Contractor's anticipated progress, in addition to the 10% described in all Items of General Conditions Article 9.

If the Contractor recovers all lost time and puts the work back on schedule (0% behind schedule) per schedule described in

B1 and remedies all breaches of C2 and C3 further payments shall be as described in C.; unless Items C1, C2, and C3 recur in which event or events the Owner shall reinstate C4.

No reduction in retainage shall be incorporated automatically in the contract. Any reduction in retainage shall only be considered on a job-by-job basis by the condition of the project at the time of issuance of the Certificate of Substantial Completion.

F. Add new sub-paragraph 9.5.3 as follows:

9.5.3 It shall be understood that if the Contractor's actual progress becomes more than 10% behind the Contractor's originally anticipated progress, the Owner may direct the retainage of payments to the Contractor in amounts equal to the percentage the work is behind the Contractor's anticipated progress. This is in addition to the normal 10% retainage.

The percentage the project is behind schedule shall be determined by adding the number of contract calendar days which have elapsed to the number of calendar days the project is behind schedule, as determined by the contractor's CPM Chart, and dividing the sum of those two numbers by the number of contract calendar days which have elapsed.

The Total Amount Completed and Stored to Date listed on the contractor's Application for Payment for the previous month shall be subtracted from the Total Amount Completed and Stored to Date on the Current Application for Payment, and the remainder shall be multiplied by the percentage the project is behind schedule to determine the retainage to be deducted from the contractor's current AFP in addition to the standard 10% retainage.

G. The following Attachment shall be included in the Contract Documents in its entirety as "Exhibit A", Section 9.6.7:

9.6.7

ATTACHMENT  
EXHIBIT "A"

Section 1, Article 1 of Chapter 10 of Title 13 of the Official Code of Georgia Annotated, relating to general provisions affecting contracts for public works, is amended by adding at the end of said article a new Code section, to be designated as Code 13-10-2, to read as follows:

13-10-2

(a) As used in this Code section, the term:

- (1) "Contractor" means a person having a direct contract with the Owner.
- (2) "Lower tier subcontractor" means a person other than a contractor having a direct contract with a subcontractor.
- (3) "Owner" means the state, any county, municipal corporation, authority, board of education, or other board, public body, department, agency, instrumentality, or political subdivision of the state.
- (4) "Owner's authorized contract representative" means the architect or engineer in charge of the project for the Owner or such other contract representative or officer as designated in the contract documents as the party representing the Owner's interest regarding administration and oversight of the project.
- (5) "Subcontractor" means a person other than an Owner having a direct contract with the contractor.

(b) In any contract for the performance of any construction project entered into on or after July 1, 1985, with an Owner, as defined in paragraph (3) of subsection (a) of this Code section, such contract shall provide the following:

After work has commenced at the construction site, progress payments to be made on some periodic basis, and at least monthly, based on the value of work completed as may be provided in the contract documents plus the value of materials and equipment suitably stored, insured, and protected at the construction site, and at the Owner's discretion such materials and equipment suitably stored, insured, and protected off site at a location approved by the Owner's authorized contract representative when allowed by the contract documents, less retainage; and

- (2) (A) Retainage to a maximum of 10 percent of each progress payment; provided, however, that when 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's authorized contract representative, the Owner shall withhold no more retainage. At the discretion of the Owner and with the approval of the contractor, the retainage of each subcontractor may be released separately as the subcontractor completes his work.

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- (B) If, after discontinuing the retention, the Owner's authorized contract representative determines that the work is unsatisfactory or has fallen behind schedule, retention may be resumed at the previous level. If retention is resumed by an Owner, the contractor and subcontractors shall be entitled to resume withholding retainage accordingly.
- (C) At substantial completion of the work or such other standard of completion as may be provided in the contract documents and as the Owner's authorized contract representative determines the work to be reasonably satisfactory, the Owner shall within 30 days after invoice and other appropriate documentation as may be required by the contract documents are provided pay the retainage to the contractor. If at that time there are any remaining incomplete minor items,  
an amount equal to 200 percent of the value of each item as determined by the Owner's authorized contract representative shall be withheld until such item or items are completed. The reduced retainage shall be shared by the contractor and subcontractors as their interests may appear.
- (D) The contractor shall, within ten days from the contractor's receipt of retainage from the Owner, pass through payments to subcontractors and shall reduce each subcontractor's retainage in the same manner as the contractor's retainage is reduced by the Owner, provided that the value of each subcontractor's work complete and in place equals 50 percent of his subcontract value, including approved change orders and other additions to the subcontract value and provided, further, that the work of the subcontractor is proceeding satisfactorily and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work including any warranty work as the contractor in his reasonable discretion may require, including, but not limited to, a payment and performance bond.
- (E) The subcontractor shall, within ten days from the subcontractor's receipt of retainage from the contractor, pass through payments to lower tier subcontractors and shall reduce each lower tier subcontractor's retainage is reduced by the contractor, provided that the value of each lower tier subcontractor's work complete and in place equals 50 percent of this subcontract value, including approved change orders and other additions to the subcontract value and provided, further, that the work of the lower tier subcontractor is proceeding satisfactorily and the lower tier subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work including any warranty work as the subcontractor in his reasonable discretion may require, including, but not limited to, a payment and performance bond.

- (c) This Code section shall not apply to:
- (1) Any contracts let by the Department of Transportation of this state for the construction, improvement, or maintenance of roads or highways in this state or purposes incidental thereto: or
  - (2) Any contracts whose value or duration at the time of the award does not exceed \$150,000.00 or 45 days in duration.
- (d) Contract and subcontract provisions inconsistent with the benefits extended to contractors, subcontractors, and lower tier subcontractors by this Code section shall be unenforceable; provided, however, that nothing in this Code section shall render unenforceable any contract or subcontract provisions allowing greater benefits to be extended to such contractors, subcontractors, or lower tier subcontractors, the provisions and benefits of this Code section being minimal only.
- (e) Nothing shall preclude a payor under this Code section, prior to making a payment, from requiring the payee to submit satisfactory evidence, including but not limited to all and/or any invoices, that all payrolls, material bills, and other indebtedness connected with the work have been paid.

In addition to the foregoing, before the Owner can implement the above amendment to the contract, a letter of consent from the Surety Company must be provided to the Owner ten (10) days prior to the contractor's request to the Owner to withhold no more retainage under the terms of Exhibit "A."

#### END OF EXHIBIT "A"

H. Add new sub-paragraphs 9.10.5 and 9.10.6 as follows:

- 9.10.5 Project close-out is to be obtained no later than sixty (60) days after the date of Substantial Completion. If, in the opinion of the Owner and Architect, it is evident that the Contractor is unwilling to bring the project to a close within the allotted time frame, and upon the issuance of two, 48 hour notices as set forth in Supplementary Conditions Article 2, Paragraph 2.4.2, the Owner will then complete all unfinished work and/or assign a value to any incomplete work and documentation. The final application for payment will be adjusted accordingly.
- 9.10.6 The Contractor shall not be entitled to final payment unless the following issues have been addressed to the Architect's satisfaction:

1. An affidavit is submitted indicating that all payrolls, invoices for materials and equipment and other liabilities connected with the work which the Owner or the Owner's property might be responsible, have been paid or otherwise satisfied.
2. Releases and waivers of lien from the contractor and all subcontractors and other parties as required by the Architect have been submitted.
3. Consent of the Contractor's Surety Company relating to final payment has been issued.

If any third party fails or refuses to provide a release of claim or waiver of lien as required above, the Contractor shall furnish a bond satisfactory to the architect to discharge any such lien or indemnify the Owner from all liability.

Final payment shall be made by check payable jointly to the Contractor and the Surety Company and shall be mailed to the Surety Company. Acceptance of the final payment shall operate as and shall be a release to The Owner from all claims or liability under the Contract for anything done or furnished or relating to the work under this Contract.

E. Add paragraph 9.11 as follows:

9.11 Owner's Right to Occupy Incomplete Work

- 9.11.1. Should the Project, or any portion thereof, be incomplete for Substantial Completion or final completion at the scheduled contractual date or dates, the Owner shall have the right to occupy any portion of the Project as set forth in Supplementary Conditions Article 2, Paragraph 2.4.2. In such an event, the Contractor shall not be entitled to any extra compensation on account of said occupancy by the Owner's normal full use of the project, nor shall the Contractor interfere in any way with said normal full use of the project. Further, the contractor shall not be relieved of any responsibilities of the Contract, including the required times of completion. Such occupancy by the Owner does not, in itself, constitute Substantial Completion nor Final Completion.

No reduction in retainage shall be incorporated as an automatic in the contract. Any reduction in retainage shall only be considered on a job-by-job basis by the condition of the project at the time of issuance of the Certificate of

Substantial Completion. No additional reduction in retainage will be allowed beyond that amount agreed to at the time of Substantial Completion. The Owner will not

release remaining funds until the punch list is complete, and all required close-out documentation has been reviewed, accepted and turned over to the Owner.

Project close-out is to be obtained no later than 60 days after the Date of Substantial Completion. If, in the opinion of the Owner and Architect, it is evident that the Contractor is unwilling to bring the project to a close within the allotted time frame, and upon the issuance of two, 48 hour notices as set forth in Article 2, Paragraph 2.4.1, the Owner will then complete all unfinished work and/or assign a value to any incomplete work and documentation. The final application for payment will be adjusted accordingly.

#### 1.10 ARTICLE 11 - INSURANCE AND BONDS

##### A. Delete paragraph 11.1.2 in its entirety and substitute the following:

11.1.2 The insurance required by paragraph 11.1.1 shall be written for not less than any limits of liability listed below or required by law, whichever is greater, and shall include contractual liability insurance as applicable to the Contractor's obligations under General Conditions paragraph 3.18.

1. The Contractor agrees that, prior to beginning any work by the Contractor or any Subcontractor, as the case may be, he (the Contractor) will furnish the following to the Owner for himself, and will obtain, and retain in his files for the duration of the construction period, like certificates for each Subcontractor.

- a. Certificate from insurance company showing coverage of Workmen's Compensation Insurance for the State of Georgia or a certificate form Georgia Workmen's Compensation Board showing proof of ability to pay compensation directly.
- b. Certificate from insurance company showing coverage for the contractor for the following:

Contractor's Protective and Public Liability Insurance: Taken out in the name of the contractor.



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Personal Injury, including death - minimum limits of \$500,000 for each person and \$1,000,000 for each accident.

Property Damage, minimum limits of \$300,000 for each accident and \$500,000 for aggregate of operations.

Certificate of insurance must be sent to Owner prior to commencement of work. See following for endorsement required on this certificate.

2. Add the following sub-paragraph 11.1.1.8:

11.1.1.8 Liability insurance shall include all major divisions of coverage and be on a comprehensive form including:

1. Premises - Operations
2. Independent Contractor's Protective, for Owner and Contractor
3. Products and Completed Operations (in force for one year beginning at Date of Substantial Completion)
4. Contractual - including specified provisions for the Contractor's obligations under Paragraph 3.18
5. Owned, non-owned, and hired motor vehicles
6. Broad form coverage for property damage
7. Explosion and collapse hazard
8. Underground hazard

C. Delete paragraph 11.1.3 in its entirety and substitute the following:

11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the work. These certificates shall contain a statement on every policy or certificate, as the case may be, that "The insurance company agrees that Policy No. \_\_\_ shall not be canceled, changed, or allowed to lapse until ten (10) days after the Owner and the Architect have received written notice as evidenced by return receipt of registered letter."

D. Delete 11.2.1 in its entirety.

E. Delete 11.3.1 in its entirety and substitute the following:

11.3.1 The Contractor shall purchase and maintain property insurance upon the entire work at the site, to the full (100%) insurable value thereof. This insurance shall include the interest of the Owner and the Contractor in the work and shall ensure against the perils of fire, extended coverage and shall include "all risk" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism, and malicious mischief.

F. Delete 11.4.1 in its entirety and substitute the following:

11.4.1 Contractor shall furnish both a Performance Bond and Payment Bond, each in the amount of 100% of the Contract Sum, unless otherwise directed by the Owner. Contractor shall also provide both Performance Bond and Payment Bond for his major sub-contractors, including grading, concrete and metal building systems. The Surety Company must be a company which is authorized to do business in the State of Georgia and is listed on the "Department of Treasury Circular 570." In addition, the Surety Company furnishing the bonds shall have an A.M. Best rating of at least a Class "A" with a financial size of VI or better. Bonds must be accompanied by a letter stating the company's current rating for verification prior to acceptance by the Owner and execution of the formal Owner/Contractor Agreement.

G. Delete Paragraph 11.4.2 in its entirety.

## 1.11 ARTICLE 13 - MISCELLANEOUS PROVISIONS

A. Delete sub-paragraph 13.5.3 and add new sub-paragraph 13.5.3 as follows:

13.5.3.1 When initial tests indicate non-compliance with the Contract documents, all subsequent retesting caused by the non-compliance shall be performed by the same testing laboratory and the contractor shall bear all costs thereof, as well as compensation for the Architect's services and expenses.

13.5.3.2 Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

13.5.3.3 All specimens and samples for testing, unless otherwise provided in these Contract Documents, shall be taken by the testing laboratory.

All sampling equipment and personnel shall be provided by the testing laboratory and all deliveries of specimens and samples to the testing laboratory shall be performed by the testing laboratory.

1.12 ADD ARTICLE 15 - PROGRESS AND COORDINATION  
MEETINGS/REPORTS

A. Add the following sub-paragraph 15.1:

15.1 When requested by the Architect, the following persons shall attend Progress and Coordination Meetings held in the Owner's office:

- a. Contractor's Superintendent
- b. Contractor's Project Manager or Principal of the General Contractor's firm
- c. Any subcontractor requested to attend by the Architect
- d. Representative of Owner

B. Add the following sub-paragraph 15.2:

15.2 When requested by the Architect, the Contractor shall furnish reports outlining the progress, condition of the project and anticipated schedule of completing the various phases of the work.

1. Add the following sub-paragraph 15.3:

15.3 Job progress meetings will be held weekly at the job site. One meeting per month shall include a review of the Contractor's Application for Payment for the previous month. The Contractor's Project Manager and Superintendent shall attend all job progress meetings.

END OF SECTION 00 801

## PART 1 - GENERAL

## 1.01 GENERAL AND SUPPLEMENTARY CONDITIONS

- A. The requirements of the Agreement Between Owner and Contractor and the General the Supplementary Conditions indicated in Division 0 are a part of and apply to all work hereunder.

## 1.02 PRE-CONSTRUCTION CONFERENCE

- A. Within 10 calendar days following issuance of the Written "Notice to Proceed" the architect shall schedule a conference for the purpose of reviewing the construction program with the contractor. The general contractor is encouraged to have all subcontractors present at the conference. The following issues will be addressed:
  - 1. Introduction of all attending parties
  - 2. Channels and procedures for communications
  - 3. Requests for substitutions in accordance with the requirements of specification Section 01 100, Part 1.02 F.
  - 4. Issuance of RFP's (Request for Proposals) by the architect shall be addressed by the General Contractor within 7 calendar days of receipt thereof in accordance with Supplementary Conditions indicated in Paragraph 7.1.5.
  - 5. Change order compensation based on figures indicated in Supplementary Conditions Paragraph 7.1.7.
  - 6. Pre-construction submittals indicated in Supplementary Conditions Paragraph 3.19.
  - 7. Shop drawings, samples and other project submittals issued in accordance with the requirements of Specification Section 01 100.
  - 8. Job progress meeting frequency. In addition to periodic progress meetings, the City would like to schedule a public "hard hat" tour of the project site, on a Saturday, near the contract completion date.
  - 9. Applications for payment issued in accordance with the requirements of the General Conditions of the contract for construction and all applicable supplementary conditions in Paragraphs 9.3.4.

10. Safety precautions and programs as directed by the General Contractor in accordance with AIA General Conditions Article 10 and part 1.07 in Section 01010.
11. Any mock-ups required.
12. Requests for time extensions shall be issued in accordance with the requirements of Supplementary Conditions Paragraph 8.3.4.
13. Discrepancies and conflicts in the Contract Documents shall be resolved using the order of precedence indicated in the Supplementary Conditions, paragraph 1.2.7. In the event of a possible discrepancy between portions of the contract documents, the Architect shall be notified in writing by the Contractor and a clarification will be issued. The Contractor assumes an obligation to bring all possible discrepancies within the Contract Documents to the Architects attention in writing for possible resolution prior to performing any construction related thereto. If the Contractor neglects to do so, all expenses related reparations required by the Owner due to such negligence shall be borne by the Contractor. In all instances, the Architect shall be the sole interpreter of the Contract Documents.
14. The date of substantial completion shall not be achieved and the substantial completion certificate shall not be issued prior to receipt of the final official certificate of occupancy by the General Contractor.
15. Contract closeout/final payment requirements shall be clearly understood by the General Contractor. Piecemeal delivery of final closeout documents and materials is not acceptable.
16. Materials testing shall be conducted by a certified testing agency in accordance with the requirements of Section 01 400.
17. Immediately prior to substantial completion , the General Contractor shall prepare a comprehensive list of items to be corrected or completed (a punchlist) for the architects review in accordance with Paragraph 9.8.2 of the AIA General Conditions. The architect shall then add to or delete items from the list during a substantial completion inspection.
18. Permits, fees, licenses, etc...., shall be addressed in accordance with the requirements of General Conditions Section 3.7, all applicable supplementary conditions and Part 1.09 A of Section 01 010.

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19. Compensation for stored material shall be as defined in Parts 6.2.1, 9.3.2, 10.2.1.2, 11.3.1.4 & 12.2.4 of the General Conditions as well as Part 9.3.2.1 of the Supplementary Conditions, Paragraph 1.03A of Section 01 010, Paragraph 1.03 A of Section 01 100 and Paragraph 2.04G of Section 01 500. Invoices for stored materials must be delivered with the applications for payment on which compensation for the stored materials has been requested. Invoices for stored materials delivered separately from the applications for payment will not be recognized until the following application for payment is received.
  20. A lien waiver issued by the General Contractor shall be submitted with each application for payment. An individual lien waiver from each subcontractor will be required prior to final payment.

#### 1.03 CONTRACTOR'S WORK AND MATERIALS STORAGE

- A. Contractor's materials storage area shall be determined at the pre-construction conference. The Contractor shall confine his storage therein and take necessary precautions to protect materials at his own expense against all weather conditions, theft and damage.
- B. All debris generated during the construction process shall be removed from the project site and adjacent property.

#### 1.04 OVERLOADING

- A. Contractor shall be responsible for overloading any part or parts of the site beyond safe load carrying capacities.

#### 1.05 MANUFACTURER'S DIRECTIONS

- A. Where it is required in the specifications that materials, products, processes, or equipment be installed or applied in accordance with manufacturer's instructions, directions, or specifications, it shall be construed to mean that said application or installation shall be in strict accordance with printed instructions furnished by the manufacturer of the material or system proposed for use under conditions similar to those experienced at the project.
- B. The Contractor shall notify the Utility Protection Center at 1-800-282-7411 prior to commencing with any subsurface excavations.

#### 1.06 LAYING OUT WORK

- A. Prior to commencing work, the Contractor shall be responsible for careful comparison and review of all Architectural, Structural, Mechanical, Plumbing, Fire Protection, Electrical, Civil, Landscape and other working drawings. All drawings shall be compared with one another which in any way affect the work to be executed. Should any discrepancy be found, it shall immediately be reported to the Architect in writing for verification and adjustment.
- B. Contractor shall exercise proper precautions to verify figures and dimensions shown on the Drawings before laying out work and shall be held responsible for any error resulting from his failure to exercise such precaution. Drawings shall not be scaled for any purpose.

#### 1.07 ACCIDENT PREVENTION

- A. Precaution shall be exercised at all times for the protection of all persons, including employees of the Contractor. Machinery equipment, openings, power lines and all other hazards shall be guarded or eliminated in accordance with the safety provisions of "The Manual of Accident Prevention in Construction" published by the Associated General Contractors of America.

#### 1.08 PERIODIC CLEANING

- A. Throughout the construction period, maintain the site in a standard of cleanliness as described in this Section.
- B. Site and Structure
  - 1. Maintain the site and adjacent areas in a neat and orderly condition at all times.
  - 2. At least weekly inspect the site and pick up all scrap, debris and waste material and remove them to the place designated for their storage.
  - 3. At least weekly and prior to any and all inspections, sweep interior spaces clean. "Clean" for the purpose of this paragraph shall be interpreted as meaning free from material capable of being removed by reasonable effort and a hand-held broom.

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1.09 FINAL CLEANING

- A. “Clean” for the purpose of this Article shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality equipment and materials.
- B. Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris and waste.
  - a. Visually inspect finished surfaces and remove all traces of soil, waste materials, smudges and other foreign matter.
  - b. Remove all paint droppings, spots, stains and dirt from finished surfaces.
- C. Unless otherwise directed by the Architect, broom clean paved areas on the site and public paved areas adjacent to the site. Completely remove resultant debris.

## 1.10 PERMITS AND REGULATIONS

- A. All work and material shall be in accordance with Safety Orders of the Division of Industrial Safety, and other applicable Federal, State, County and City Municipal laws, ordinances, rules and regulations pertaining to construction. Nothing in the contract documents shall be construed to permit work not conforming thereto. The Contractor shall consult the Architect on all issues regarding possible non-conformance. Contractor shall provide all labor, materials and equipment to complete the work as required by all applicable laws, ordinances, rules and regulations. The Contractor shall consult the Architect before making any determinations as to changes in quality, scope and/or increases or decreases in cost.
- B. The Contractor shall notify all local utility companies prior to beginning any subsurface investigations.

## 1.11 PROJECT COMPLETION

- A. When the Contractor has received the Final Official Certificate of Occupancy for the project, the Architect shall review the project for Substantial completion. If the project is Substantially complete, as defined in the General Conditions of the Contract for Construction, the Architect shall issue a Certificate of Substantial Completion.



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- B. When the project is substantially complete (as defined in the Agreement Between the Owner and the Contractor) and all mechanical and electrical systems are operating after having been checked by the Contractor and/or manufacturer, the Contractor shall notify the Architect in writing at least seven days before the date of request for substantial completion inspection. The Contractor shall arrange for the presence of all subcontractors whose work is involved.
1. No sooner than 2 calendar days prior to the proposed date of substantial completion inspection, the Contractor shall prepare a "Punch List" for items not completed and work not complying with the requirements of the Contract Documents. The Architect shall add to and/or delete items from the punch list during the Substantial Completion inspection. The "Punch List" shall not be construed as a contract requirement but is intended only to assist in the completion of the project. The Contractor shall make a diligent effort to complete all work in conformance with the requirements of the Contract Documents before requesting a "Punch List".
  2. Correction of items noted on the "Punch List" does not relieve the Contractor from conforming with all requirements of the Contract Documents.
- C. Before final payment is made, the following items shall be delivered in satisfactory form to the Owner:
1. All maintenance/operating manuals and instructions.
  2. All guarantees required by the individual technical specification sections.
  3. All other required items noted in the Contract Documents.
  4. All items on the Punch List shall have been completed in satisfactory order and such notice forwarded in writing to the Architect.
  5. All as-built drawings shall be provided by the Contractor as described in the Specifications.
  6. All maintenance and replacement stock material required.
  7. Submit the original Fire Marshals' occupancy permit to the City of Toccoa.
  8. Obtain and provide original occupancy permit from the City of Toccoa.

9. Certificate which warrants that all materials, products and assemblies incorporated in this project are totally free of asbestos, PCB, or other such hazardous material.
10. Owner, after completion of project, may elect and pay to use services of an independent testing agency to test for asbestos content.
11. If asbestos materials are found to exist in work performed by the Contractor for this project, the Contractor shall pay for the testing above and shall replace the asbestos containing material at no cost to the Owner.

D. Final Inspection

1. When the work is completed in accordance with the Contract Documents and the requirements of Paragraphs A and B above and General and Supplementary Conditions of the contract for construction have been satisfied, the Contractor shall notify the Architect in writing that the work shall be ready for final inspection on a definite date, which shall be stated in such notice. The Architect shall receive such notification no sooner than seven calendar days prior to the date stated in such notice. The notice shall be forwarded to the Architect, who shall attach his endorsement as to whether or not he agrees with the Contractor's statement that the work will be ready for final inspection on the established date, but such endorsement shall not relieve the Contractor of any contractual responsibilities.
2. Final inspection shall be made by the Owner, Architect, and/or Consultants when the Contractor states that the project has been completed in accordance with the Contract Documents, all punch list items have been completed and a formal written request for final inspection is made as outlined above.

1.12 LIMITS OF WORK

- A. Utility interfaces between site and existing utilities shall occur as indicated on the working drawings.
- B. Sidewalks and surface pavings shall be installed as indicated on the working drawings.
- C. Domestic water line shall connect at user side of meter.
- D. Electrical lines shall connect at secondary side of pole and pad-mounted transformers.
- E. Natural gas lines shall connect at user side of pad mounted meter/regulator.

## 1.13 OFFENSIVE BEHAVIOR

- A. A penalty of \$100.00 per event shall be levied against the General Contractor and, subsequently, deducted from the next application for payment for objectionable behavior by any of the General Contractor's forces while on the Owner's property, as determined by the Architect. This objectionable behavior shall include, but not necessarily be limited to, profanity, alcohol and/or illegal drug consumption or possession and sexual misconduct.
- B. All workmen shall be fully clothed and shall be expected to exhibit acceptable behavior. Association with the public shall be prohibited. Refer all non-project related visitors to the City Hall for assistance. Failure to comply with this requirement can subject personnel to being banned from the project site.

END OF SECTION 01 010

PART 1 – GENERAL

## 1.01 CONTRACT DOCUMENTS

- A. In order to document the components, which comprise the contract documents, a detailed list of all drawings, specifications addenda, and modifications depicting the last revision date shall be attached to the Agreement Between the Owner and Contractor. The listed documents shall then represent the permanent record set.
- B. The Contractor shall check all construction documents furnished him immediately upon their receipt and shall promptly notify the Architect in writing of any discrepancies. Symbols marked on drawings shall, in general, be followed rather than scale of drawings. The Contractor shall compare all construction documents and verify the figures before laying out the work and shall be responsible for any errors which might have been avoided thereby.

## 1.02 CONTRACTOR SUBMITTALS

## A. General

- 1. Contractor shall make all of the following submittals to the Architect for review in strict accordance with applicable provisions of the contract documents.
  - a. Progress Schedule (see Section 01 112)
  - b. Schedule of Values
  - c. Certifications
  - d. Shop Drawings and Submittals
  - e. Samples
  - f. Substitutions
  - g. Maintenance/Operating Manuals
  - h. As-Built Drawings
  - i. Guarantees

## B. Schedule of Values

1. No later than 10 calendar days following issuance of the Written Notice To Proceed, prior to the preconstruction conference, the Contractor shall submit for Architect's review a schedule of values for portions of work, aggregating the total contract sum, divided to facilitate payments to Subcontractors. Each item in schedule of values shall be broken down to include values for labor, materials, equipment, overhead and profit. This schedule, when reviewed by Architect, shall be used as a basis for Contractor's Applications for Payments. A sample of schedule of values cost index is provided in Specification Section 01 370.

C. Certifications

1. Where specifically required by pertinent specification sections, proper certification by a recognized laboratory or professional association shall be submitted in lieu of and/ or in addition to required testing. Certifications shall attest to product compliance with requirements of the Contract Documents.

D. Shop Drawings and Submittals

1. All shop drawings and submittals shall be marked with name of project and name of Contractor and shall be numbered consecutively. All shop drawings and submittals must be legible and complete in every respect with regard to contract documents requirements.
2. If shop drawings or submittals show variations from Contract requirements because of standard shop practice or some other reason, Contractor shall make specific mention of such variations in his letter of transmittal, as well as on the shop drawings and submittals. Unless specific changes have been noted and reviewed by the Architect, no deviations from Contract Documents shall be accepted.
3. Corrections or comments made on the shop drawings during the Architect's/Engineer's review do not relieve the contractor from his responsibility to comply with the requirements of the contract documents. Shop drawings shall be reviewed by the Architect/Engineer for general conformance with the design concept of the project and general compliance with Contract Documents requirements: The Contractor shall be responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.
4. Shop drawings and submittals which do not display evidence of contractor's review prior to submittal for Architect's/Engineer's review shall be promptly

returned to the contractor for corrections prior to Architect's/Engineer's review.

5. By reviewing and submitting shop drawings and other submittals for Architect's/Engineer's review, the contractor represents that he has determined and verified materials, field measurements and field construction criteria related thereto, and has checked and coordinated the information contained within such shop drawings and other submittals with the requirements of the work and the contract documents. Contractor's review stamp shall clearly reflect the provisions of this verbiage.
6. For manufacturer's standard schematic drawings, contractor shall:
  - a. Modify drawings to delete information, which is not applicable to project
  - b. Supplement standard information to provide additional data applicable to project
7. For manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data, contractor shall:
  - a. Clearly mark each copy to identify pertinent materials, products or models
  - b. Show dimensions and clearances required
  - c. Show performance characteristics, capacities, installation requirements and maintenance requirements
  - d. Show wiring diagrams and controls

E. Samples

1. Physical examples of products submitted to Architect shall illustrate materials, finishes, workmanship and shall establish standards by which completed work shall be judged by Owner and Architect.
2. Architect's office samples shall be of sufficient size and quantity to clearly illustrate:
  - a. Functional characteristics of product or material, with integrally related parts and attachment devices
  - b. After Architect's review, samples may be used in construction of Project
3. Field Samples and Mockups

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- a. Erect samples and mockups at project site in location acceptable to Architect and Owner
- b. Construct each sample or mockup complete, including work of all trades required in finished work.

F. Substitutions

1. Architect's review shall be required for all substitutions.
  - a. Architect shall consider proposals for substitutions of materials, equipment and methods of construction only when such proposals are accompanied by full and complete technical data and all other information required by the Architect to evaluate proposed substitution.
  - b. Do not substitute materials, equipment or processes unless such substitution has been specifically reviewed for this work by the Architect.
2. Acceptance of a substitution by the architect shall not relieve the Contractor from responsibility for compliance with all requirements of the contract documents. Contractor shall be responsible, at his own expense, for any changes in other parts of his own work or work of others which may be caused by substitutions.
3. All requests for substitution by contractor shall be submitted in full compliance with all requirements of section 01 630 - Product Options and Substitutions.

G. Maintenance/Operating Manuals

1. Two manuals are required to be submitted prior to Substantial Completion covering all materials, products, finishes, systems, equipment, accessories, etc. included in this project. Contractor shall prepare two such manuals in durable plastic 3 ring binders approximately 8-1/2" x 11" in size, divided into logical sections with at least the following information:
  - a. Identification on front cover stating general nature of manual
  - b. Neatly typewritten index near front of manual furnishing immediate information regarding location in manual of all data
  - c. Complete instructions regarding operation and maintenance of all project equipment
  - d. Complete nomenclature of all replaceable parts, part numbers, current costs and name and address of nearest vendor of parts
  - e. Copy of all guarantees and warranties required

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SECTION 01 100-5

- f. Copy of all reviewed shop drawings and submittals with all data concerning changes made during construction
  - g. List of all contacts for emergency and standard warranty service indicating addresses and phone numbers
  - h. Wiring diagrams and recommended "turn around" cycle
2. Where contents of manuals include manufacturer's catalog pages, clearly indicate precise items included in this project and delete or otherwise clearly indicate, all manufacturer's data which is not relevant to this project.

H. As-Built Drawings

1. General

- a. At time of installation, locations of all underground work, including all utility pipes, sleeves and conduits, shall be recorded on prints by Contractor and reviewed by the Architect.
- b. Contractor shall notify Architect when underground work has been completed. On such notice, Architect shall furnish a complete set of blue-line drawings to Contractor, who will transfer all installed utility pipe and conduit locations to the blue-line drawings and return them to Architect for review.
- c. All information entered on the blue-line as-built drawings shall be neat, legible and emphasized by drawing "clouds" around items installed differently than indicated on original drawings. Format of changed items on drawings shall be acceptable to Architect.
- d. Contractor shall locate and dimension all work, including stubs for future connections, with reference to permanent landmarks or buildings and indicate approximate depth of work below finish grade.
- e. All symbols and designations used in preparing as-built drawings shall match those used elsewhere in the Working Drawings.
- f. In addition, contractor shall revise remainder of all working drawings to reflect any changes involving items installed differently than indicated on original drawings.

I. Guarantees

- 1. Contractor shall guarantee all work executed by his forces and his subcontractors under this contract, and any additional modifications and change orders, to be absolutely free of all defects of workmanship and materials for a period of one year beginning on date of Substantial Completion. See Warranty Forms - Specifications Sections 01 740 and 01 741. Contractor shall repair all such defects, resulting damages and repair any damage to other work caused by subsequent repair work to Architect's



and Owner's satisfaction no later than 30 calendar days following written notification by Owner that remedial repairs are required.

2. At the end of the one year warranty period, the Contractor shall inspect the project with the Owner for construction deficiencies. At that time, a correction list shall be prepared by the Owner and the Contractor shall make the necessary repairs and corrections immediately and as directed by the Owner.
3. Contractor shall provide additional guarantees (in excess of one year) where specifically required by pertinent specification sections.

J. Execution

1. Submittal Requirements (including shop drawings)
  - a. Schedule submittals at least two weeks before date reviewed submittals will be needed. Contractor shall receive reviewed submittals no later than 14 calendar days following Architect's receipt of contractor-reviewed submittals.
  - b. All submittals shall be accompanied by a transmittal form addressed to the Architect and shall be consecutively numbered. Submittals shall contain a list of items submitted which are properly identified with regards to pertinent specification sections.
  - c. Architect shall review submittals for compliance with design concepts of project only. An effort shall be made by Architect to discover any errors, but responsibility for accuracy and correctness of submittals shall be the Contractor's.
  - d. Review of submittals by Architect/Engineer shall be general and shall not relieve the Contractor from responsibility for proper fitting and construction of work, nor from furnishing materials and work required by Contract, which may not be indicated on submittals when reviewed.
  - e. No portion of the work requiring submittals shall be undertaken until submittal has been reviewed by Architect. All such portions of work shall be in accordance with reviewed submittals.
  - f. Submittal Copies Required
    - i. Provide 3 copies of the Progress Schedule.
    - ii. Provide 2 copies of Schedule of Values.
    - iii. Provide 2 copies of all required Certifications.
    - iv. Provide 4 copies of all Shop Drawings.

- v. Provide 4 copies of all Manufacturers Product Data/Material Lists.
  - vi. Provide Samples as specifically indicated in pertinent specification sections.
  - vii. Provide two sets of manufacturer's complete range of samples for initial color/pattern selections and 2 additional samples of selected color/pattern for inclusion in final color schedule.
  - viii. Provide 3 copies of all required data and information regarding accepted substitutions.
  - ix. Provide 2 bound copies of maintenance/operation manuals.
  - x. Provide one set of Contractor-revised blueline as-built drawings.
  - xi. Provide 2 copies of the Standard Warranty Forms (see Warranty Forms - Specification Sections 01 740 and 01 741) as well as 2 copies of additional warranties required by pertinent specification sections.
- g. Submittals shall include (where applicable) the following information
- i. Date and revision dates
  - ii. Project title and Architects project number
  - iii. The names of Contractor, Subcontractor and product supplier or manufacturer
  - iv. Identification of product or material
  - v. Relation to adjacent structure or material
  - vi. Field dimensions (clearly identified as such)
  - vii. Applicable specification section number
  - viii. A 4" x 6" blank space on front side for Architect's stamp
  - ix. Contractor's stamp, initialed or signed, certifying review of submittal, verification of field dimensions and compliance with contract documents. Verbiage user on contractors review stamp shall be subject to Architects review.

- h. Architect's review is contingent upon prior review and approval by Contractor. Submittals shall be returned to the Contractor without Architect's review if evidence of Contractor's review is not clearly indicated on all submittals.
- i. Corrections or comments made on submittals/shop drawings by Architect or Engineer during their review does not relieve the General Contractor from compliance with the requirements of the contract documents and specifications. Architect's/Engineer's review is only for review of general compliance with the design concept of the project and general compliance with the information given in the Contract Documents. The General Contractor shall be responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating work of all trades and assuring that all work is performed in a safe manner satisfactory to the Owner and the Architect.

END OF SECTION 01 100

PART 1 - GENERAL

1.01 ON SITE OBSERVATIONS

- A. All work and materials shall be subject to review by the Architect and Owner or their authorized representatives.
- B. The Contractor shall fully cooperate and shall furnish all reasonable facilities for the inspections of all parts of the work during the entire construction period required by the Contract Documents and all jurisdictional authorities.

1.02 TESTING SERVICES

- A. All materials upon which the strength and durability of the work may depend shall be subject to inspection and testing to establish whether the materials are in compliance with the requirements of the Contract Documents.
- B. A material testing company shall be selected, employed and paid by the Owner to perform material testing services for the project as defined in this specification section. The testing company shall retain the services of an Engineer registered in Georgia. The testing company shall conduct all required testing and issue reports reflecting the conditions and physical characteristics of the materials observed.
- C. It is the responsibility of the Contractor to implement the services of the testing company by ordering required services at the appropriate time in the work, as described below. The Contractor shall provide at least 24 hours notice to the testing company for required testing work. Failure to provide adequate notification may result in the requirement for more complex "after-the-fact" testing, payment for which the Contractor shall be totally responsible. If testing yields unacceptable results, additional testing shall be performed at the contractor's expense until favorable results are obtained in accordance with the specified standards. Contractor shall also bear all costs related to architect's services related to evaluation of tests which yield unfavorable results. The testing agency shall isolate reports indicating failure and associated billing to facilitate the administration of this provision.
- D. Site plumbing system pressure testing required under Paragraph 1.03 H listed below shall be coordinated and paid for by the Owner. Those tests shall be witnessed by the appropriate local agencies as well as by the Architect and/or Owner's Representative. The Contractor shall secure and maintain evidence of having completed and obtained successful results for all required testing. Evidence shall be transmitted to the Owner and Architect no later than 10 days following testing.

1.03 SUMMARY OF REQUIRED TESTING

A. Earthwork

1. The testing company's Engineer shall monitor subgrade preparation, foundation bearing grades, and test all backfill. All excavation, preparation of foundation bearing grades and earthwork related construction must be performed in the presence of the testing company's Engineer.
2. Prior to importing any fill material to the site, the testing company shall verify that the proposed fill material is of suitable quality for its intended use. Any residual or previously excavated fill material from on-site proposed to be reused in the new work shall also be tested for suitability prior to replacement.
3. After stripping/clearing operations and excavating have been completed to the specified excavation limits, the residual material over which additional fill, construction or pavement is to be placed shall be verified by the testing agency to be suitable for its intended purpose. This shall be accomplished by proof rolling the areas under construction, by test pits or by other measures deemed appropriate by the testing agency's Engineer. Proof rolling shall be performed by the General Contractor using a ten ton smooth drum static roller. Unsuitable areas shall be undercut and backfilled with structural fill as directed by the testing agency's Engineer.
4. All fill material shall be tested by performing in-place density and proctor tests at the minimum rate of one test per 5000 square feet per one foot of lift and one test for every 50 lineal feet for each 2 feet of depth for wall and trench backfill. The testing shall also indicate the type of material observed, the location of the test, the material moisture content and the current weather. Delivery and compaction of fill material shall be made in the presence of the testing agency's Engineer and shall be subject to his approval. The inspection by no means absolves the contractor from responsibility of compaction specified by the Civil Engineer.
5. All foundation bearing grades must be monitored by the testing agency's Engineer and tested by the testing agency prior to placement of foundations and/or footings.
6. Unless fill material is covered with concrete, paving, etc. immediately following procedures described in 2. and 3. above, the fill material shall be inspected by the testing agency's Engineer again prior to the placement on those surfaces. The purpose of this final inspection is to preclude deterioration of the required conditions from continuing construction, water or similar causes.

B. Cast-In-Place Concrete

1. Design mix by the concrete supplier shall be reviewed by Structural Engineer and testing agency prior to composing first batch. Batch test frequency shall be as recommended by the material testing agency. Samples shall be procured in accordance with ASTM C172 and cylinders shall be made and cured in accordance with ASTM C31.
2. Slump tests shall be conducted on every 20 cubic yards of concrete used on the project used for any purpose in accordance with ASTM C142-78.
3. Compressive tests shall be performed in accordance with ASTM C39-84. Concrete cylinders shall be taken at the rate of one set of five per 50 cubic yards or less of material used for any purpose per day. One cylinder shall be broken at each of 3 days and 7 days and two shall be broken at 28 days. If the two breaks at 28 days average less than their design strength, the last will be held for a 56-day break. If the first two are over designed, the third cylinder will be broken for a 3-cylinder average.
4. Air entrainment testing shall be performed as required by ASTM C231.
5. The slump tests, cylinders and air entrainment tests shall be performed by the testing agency. The cylinders shall be used to report compressive strength, air content, additives, slump and date/time/exact location and weather when made.

C. Masonry

1. A prism section for CMU prism testing shall be built by the Contractor using the specified concrete masonry units, the specified mortar and the approved pre-mix grout. The prism section shall be of the length and height prescribed by the testing agency. This sample prism section shall then be tested for prism strength characteristics. Prism strength shall be 1500 psi or greater. Mortar strength shall be as defined in Specification Section 04100. Block type and prism strength shall be as defined in Specification Section 04220.
2. A design mix for grout shall be submitted and reviewed prior to composing first batch. A box sample, as prescribed by the testing agency, shall be provided and tested for compliance with compressive strength requirement.

D. Reinforcing Steel Placement

Prior to the placement of concrete for the reinforced concrete footings, columns and beams, a testing agency representative shall inspect the reinforcement bar placement for accuracy.

E. Site Plumbing System Pressure Tests

1. Domestic and Fire Water
  - a. System shall hold 125 psi pressure for 2 hours without pressure drop.
2. Storm Sewer
  - a. System shall hold 10 ft. head, without a pressure drop in 2 hours.
3. Natural Gas
  - a. System shall hold 50 psi for 12 hours without pressure drop.
4. Sanitary Sewer Waste
  - a. System shall hold 10 ft. head for 2 hours without a pressure drop.

#### 1.04 RETESTING

- A. When any of the required initial tests indicate non-compliance with the specified requirements, all subsequent retesting caused by the non-compliance shall be performed by the same testing agency, and the costs thereof shall be borne by the General Contractor and deducted by the Owner from the contract sum. The testing agency shall isolate reports indicating failure and associated billing to facilitate the administration of this provision.

#### 1.05 CODE COMPLIANCE TESTING

- A. Inspections and tests required by codes, legal ordinances authorities shall be the responsibility of the Contractor, unless the tests are otherwise provided for in the Contract Documents.

#### 1.06 CONTRACTOR'S CONVENIENCE TESTING

- A. Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

#### 1.07 COOPERATION WITH TESTING LABORATORY

- A. Representatives of testing agencies shall have access to the work at all times. Contractor shall provide for such access in order that the laboratory may properly perform its functions.
- B. Notify testing agency at least 24 hours in advance of required testing to allow for assignment of personnel and scheduling.

1.08 TAKING SPECIMENS

- A. All specimens and samples for testing, unless otherwise provided for in these Contract Documents, shall be taken by the testing agency. All sampling equipment and personnel shall be provided by the testing agency and all deliveries of specimens and samples to the testing laboratory will be performed by the testing agency personnel.

1.09 DISTRIBUTION OF TEST RESULTS

Distribution of appropriate test results from Testing Agency shall be as follows. Provide one copy to each person.

- A. Contractors Superintendent
- B. Contractor's Project Manager
- C. Owner
- D. Architect's Project Manager
- E. Civil Engineer (civil work only)
- F. Structural Engineer (structural work only)
- G. Chief Building Inspector

1.10 COMPLIANCE WITH FEDERAL CLEAN WATER ACT

- A. To maintain compliance with the Federal Clean Water Act, the requirements of Georgia's NPDES General Permit for construction are to be met in the following manner:
  - 1. NOI or Notice of Intent will be filed by the contractor prior to the commencement of the work.
  - 2. A certification statement will be signed by the General Contractor and the grading subcontractor, stating that they agree to comply with the requirements of the Storm Water Pollution Prevention Plan.
  - 3. WEEKLY INSPECTION - Each site is required to be inspected at least once every seven days and within 24 hours after the end of a storm that has 0.5 inches of rainfall or greater. The inspector must identify needed changes and



revise the plan accordingly or certify that the site is in compliance. Once a site is stabilized, inspections are required only once a month until a Notice of Termination (NOT) is filed with the EPD. Each inspection must be documented in a report that is kept on site. EPD staff may have access to records at any time. Inspections are to be done by the General Contractor.

4. A log book will be furnished by the General Contractor for use in logging in each inspection required in Item 3. The log book is to be available to the Architect and the Owner's Representative for review at anytime.
5. A copy of the erosion control plan is to be updated by the General Contractor depicting any corrections or modifications to the erosion control plan as may occur during the course of the work. The plan is to be turned over to the Owner at project close-out.
6. At the close-out of the project and when all site work has been signed-off on by the City Development Inspections Department, the Owner will then issue a Notice of Termination with the Georgia EPD.

Failure of the General Contractor to properly maintain the prescribed erosion control requirement, and after a 24 hour written notice from the Owner, will result in the Owner performing any necessary repairs. A back charge to the contract price will be done to compensate the Owner for any expenses incurred.

END OF SECTION 01 400

PART 1 - GENERAL

1.01 SCOPE

- A. Construction facilities and temporary controls required for this project shall include, but are not necessarily limited to the following:
  - 1. Temporary utilities such as natural gas, water, electricity and telephone
  - 2. Field Office
  - 3. Sanitary Facilities
  - 4. Enclosures such as tarpaulins, barricades, and canopies
  - 5. Required fencing of construction area for safety and security
  - 6. Parking area for construction personnel vehicles
- B. All construction facilities and temporary controls shall be provided by the contractor.

1.02 PROTECTION

- A. Use all means necessary to maintain construction facilities and temporary controls in proper and safe conditions throughout progress of the project.

1.03 REPLACEMENTS

- A. In the event of loss or damage, Contractor shall immediately make all repairs and replacements necessary to construction facilities and temporary controls to the Architect's satisfaction at no additional cost to Owner.

1.04 TEMPORARY UTILITY CONNECTIONS

- A. Contractor shall pay for all fees for temporary utility connections.

PART 2 - PRODUCTS

2.01 TEMPORARY UTILITIES

- A. Contractor shall furnish water, natural gas, electricity and telephone service required during construction and extend temporary service lines to construction areas for use of all subcontractors, and Owner's forces.
- B. Temporary Water
  - 1. Contractor shall provide ample temporary supply of potable water for all purposes of construction at access points convenient to personnel. Water shall be piped by the Contractor from source of supply to all points where water will be required. Supply source shall be determined by the Contractor in cooperation with the Owner.
  - 2. Contractor shall provide heavy duty hose or PVC pipe to carry water to every required project location and allow use of water facilities to subcontractors engaged in work.
- C. Temporary Electricity
  - 1. All temporary electrical facilities shall be constructed and maintained by Contractor in accordance with the Division of Industrial Safety "Electrical Safety Orders" (ESO) and the Public Utilities Commission "Rules for Overhead Line Construction". Materials, devices and equipment used for these facilities shall be in good and safe condition but need not be new.
  - 2. Installation of lighting and safety lights shall be in accordance with local, state and federal applicable codes.
  - 3. Contractor shall run a copper ground wire, sized in accordance with NEC, in conduit and bond to all steel parts using clamps required by the N.E.C.
  - 4. Any attachment of conduit to wood structures shall be by means of bolts or lag screws in shear. All anchors shall be capable of supporting four times actual load.
  - 5. Contractor shall apply for temporary electric service and pay for costs of electricity used during the course of construction and until final completion of project. Contractor shall be responsible for temporary rules, meters, conductors, connections and all other related costs.

- D. Contractor shall provide heat, ventilation, fuel and services as required to protect all personnel and materials and to keep humidity down to the extent required to prevent corrosion of metal and to prevent condensation, dampness and mildew, which is potentially damaging to materials and finishes.

D. Telephone

1. Contractor shall maintain a telephone in field office. Long distance charges shall be paid for by calling parties. Other expenses shall be paid for by the Contractor.
2. Contractor shall provide and pay for the telephone installation and service in the field office. Service shall be maintained for duration of project operations under this contract. Contractor shall also provide and install an electronic telephone answering and fax machine with a dedicated line for 24-Hour service within the temporary field office.

2.03 SANITARY FACILITIES

- A. Contractor shall provide proper, adequate, sanitary facilities for use of all workers employed on project in accordance with State and Local Health Departments. Facilities shall be located for convenient access by all personnel.

2.04 TEMPORARY CONSTRUCTION, EQUIPMENT, AND PROTECTION

- A. Contractor shall provide, maintain, and remove immediately following substantial completion of project, all temporary rigging, scaffolding, hoisting equipment, rubbish chutes, ladders, guardrails, barricades, lights and all other protective structures or devices necessary for safety of workers and public property as required to complete project.
- B. Contractor shall provide all necessary protection and all barricades conforming to the standards of O.S.H.A. and requirements of the City and/or County in which the project is being built.
- C. Contractor shall provide chain link fencing enclosures with locking gates to protect equipment and materials.
- D. Contractor shall protect all workers and equipment from power lines and maintain safe distances and protective devices as required by the Industrial Safety Commission.

- E. All temporary construction and equipment shall conform to all regulations, ordinances, laws and other requirements of City, State and all other authorities having jurisdiction, including insurance companies, with regards to safety precautions, operation and fire hazard.
- E. Contractor shall provide and maintain pumping facilities, including power for pumping excavations and structures free of accumulations of water at all times, whether from underground seepage, rainfall, drainage, broken lines or any other source.
- F. Contractor shall protect materials scheduled for use or previously incorporated on the project from damage and loss due to elements, theft, vandalism, malicious mischief and other causes including stored materials which have had their title transferred to the Owner. Contractor shall be held responsible for such damages and losses which he shall remedy at his expense.

## 2.05 PARKING OF VEHICLES

- A. Contractor shall assume all responsibility for parking of his vehicles and his subcontractor's vehicles. "Job site parking" means an area or areas within the bounds of the property or other authorized areas to be used for parking of vehicles associated with this project. Such areas shall be designated at the preconstruction conference.

## 2.06 STORAGE OF OWNER FURNISHED PRODUCTS

- A. Contractor shall provide temporary storage facilities for Owner furnished components as required by the Owner.

## 2.07 CONSTRUCTION SIGN

- A. Project sign shall be included in the contract that is 4' ht. x 8' wide sign, to include name of Contractor, Owner, and Architect/Engineer.
- A. Signs shall be painted with a minimum of two coats of exterior paint. Contractor shall employ professional sign painter to paint all lettering. Project name shall be repainted by change order, should permanent name be selected during the construction project.
- B. This sign shall be the only free standing sign permitted on the project site.
- C. All wording shall be verified with the Owner prior to installation on project site.
- D. Project Construction sign shall comply with all applicable regulations and ordinances.

- E. Construction sign shall be installed immediately following Contractor's Notice to Proceed, prior to footing excavations.

### PART 3 - EXECUTION

#### 3.01 MAINTENANCE AND REMOVAL

- A. Contractor shall maintain all construction facilities and temporary controls as long as required for safe and proper completion of the project. Contractor shall remove all such facilities and controls as rapidly as progress of the project will permit or as directed by Owner.

END OF SECTION 01 500

PART 1 - GENERAL

1.01    PRODUCTS

- A. Products are specified by ASTM and/or other reference standard, and/or by manufacturer's name and model number or trade name. When specified only by reference standard, Contractor may select any product meeting this standard by any manufacturer. When several products or manufacturers are specified as being equally acceptable, Contractor shall have the option of choosing among those names. When one manufacturer's specific product is specified and other manufacturers are listed as being acceptable suppliers, the other manufacturers products must have the same basic properties as the specific product mentioned. Otherwise, the following substitution provisions must be observed.

1.02    SUBSTITUTIONS

- A. During bidding, the Architect shall consider written requests for substitutions received at least ten calendar days prior to the bid date. Requests received after that time shall not be considered.
  - 1. Contractor shall submit requests for substitution on form attached to this section, which may be copied. Form shall be complete, accurate and legible.
  - 2. Blank substitution forms are also available at most local plan centers and at the Architect's office.
  - 3. If proposed substitution is accepted by Architect, such acceptance shall be set forth in an addendum or modification. Bidders shall not rely upon accepted substitutions made in any other manner.
- B. The Contractor shall be required to provide a substitution form for any change to the original documents before the decision is made whether it will be incorporated into the contract documents.
- C. Prior to award of the Contract, the Architect may consider formal requests from the Contractor for substitution of products in lieu of those specified. Requests shall be submitted in accordance with the preceding requirements. One or more of the following conditions must also be documented:
  - 1. Substitution is required for compliance with interpretation of code requirements or insurance regulations that exist.

TUGALO STREET GREENSPACE PROJECT

CPL R22.16993.00    PRODUCT OPTIONS AND SUBSTITUTIONS    SECTION 01 630-2

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2. Substitution is required due to unavailability of specified products through no fault of the Contractor.
  3. Substitution is required because subsequent information disclosed an inability of specified products to perform properly or to fit in designated space.
  4. Substitution is required because manufacturer/fabricator refuses to certify or guarantee performance of specified product as required.
  5. When in the judgment of the Owner the proposed substitution is substantially in the Owner's best interest in terms of costs, time or other consideration.
- D. Should the Contractor wish to substitute another product or method for products or methods specified or shown in Contract Documents, whether or not such phrases as "or equal", "equivalent to", or "based on" are used, he shall apply in writing for review. He shall enclose such data as Architect requires to evaluate the proposed products. The Architect's decision shall be final. Contractor is responsible for special requirements of substitutions. He shall execute necessary changes in adjacent work and relocate Work as necessary due to such substitutions, and he shall be responsible for delays required for evaluation of proposed substitutions
1. Full explanation of the proposed substitution and submittal of all supporting data including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures and other similar information necessary for a complete evaluation of the proposed substitution.
  2. Reasons substitution is advantageous and necessary including the benefits to the Owner of the Work in the event substitution is acceptable.
  3. The adjustment, if any, in the Contract Sum in the event the substitution is acceptable.
  4. The adjustment, if any, of time of completion of the Contract and Construction Schedule in the event the substitution is acceptable.
  5. An affidavit stating that (1) the proposed substitution conforms to and meets all the requirements of the pertinent specifications and the requirements shown on the working drawings, and (2) the Contractor accepts the warranty and correction obligations in connection with the proposed substitutions as if originally specified by the Architect. Proposals for substitution shall be submitted in triplicate to the Architect with sufficient time to allow the Architect no less than ten working days to review. No substitutions will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated herein.



- E. In submitting requests for substitution, the Contractor shall make the following representations:
  - 1. Contractor has investigated proposed product and has determined that it is equal or superior in all respects to the specified product.
  - 2. Contractor will provide an equal or better guarantee for proposed substitution as compared to the product specified.
  - 3. Contractor will coordinate installation of accepted proposed substitution into the project, making any such changes as may be required for the project to be completed in accordance with the Contract Documents.
  - 4. Contractor waives all claims for additional costs related to proposed substitution which become apparent during or following substitution submittal process.
  - 5. Cost comparison data is complete and includes all related costs under the contract:
  - 6. The proposed substitution satisfies Code Official's interpretations of all applicable codes.
- F. Substitutions shall not be considered if:
  - 1. They are indicated or implied on shop drawings or product data submittals without a formal request submitted in accordance with this Article.
  - 2. Acceptance will require substantial revision of contract documents.

REQUEST FOR SUBSTITUTION

PROJECT: City of Toccoa – Tugalo St Greenspace

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

CONTRACTOR: \_\_\_\_\_

SUBCONTRACTOR: \_\_\_\_\_

SUPPLIER: \_\_\_\_\_

1. The following required information is attached:
  - A. Product identification, manufacturer's name, address, telephone number
  - B. Manufacturer's literature, performance/test data, reference standard
  - C. Name/address of similar projects where product has been used and Date of Application
2. Comparison of proposed substitute product with specified product:  
\_\_\_\_\_  
\_\_\_\_\_
3. If submitted after the date the contract agreement between the owner and contractor is signed:
  - A. Data related to changes in construction schedule:  
\_\_\_\_\_  
\_\_\_\_\_
  - B. Accurate cost data on proposed substitution in comparison with product specified:  
\_\_\_\_\_  
\_\_\_\_\_

C.     Reason for request for substitution: (Check One)

- 1)    Substitution is required for compliance with interpretation of code requirements or insurance regulations that exist.
- 2)    Substitution is required due to unavailability of specified products through no fault of the Contractor.
- 3)    Substitution is required because subsequent information disclosed an inability of specified products to perform properly or to fit in designated space.
- 4)    Substitution is required because manufacturer/fabricator refuses to certify or guarantee performance of specified product as required.
- 5)    When in the judgment of the Owner the proposed substitution is substantially in the Owner's best interest in terms of costs, time or other consideration.

END OF SECTION 01 630

CONTRACTOR WARRANTY FORM

PROJECT: TUGALO STEET GREENSPACE

LOCATION: TOCCOA, GEORGIA

OWNER: CITY OF TOCCOA

GENERAL CONTRACTOR:

We \_\_\_\_\_, contractor  
(Company Name)

for \_\_\_\_\_, as described in Specification Section (s)  
(list trade)

\_\_\_\_\_ do hereby warrant  
(list appropriate sections of specifications)

that all labor and materials furnished and work performed in conjunction with the above referenced project are in accordance with the Contract Documents and authorized modifications thereto, and will be free from defects due to defective materials or workmanship for a period of one year from Date of Substantial Completion.

This warranty commences at 12:00 noon on \_\_\_\_\_

and expires at 12:00 noon on \_\_\_\_\_. Should by

any defect develop during the warranty period due to improper materials, workmanship or arrangement, the defect shall, upon written notice by the Owner, be repaired or replaced by the undersigned at no expense to the Owner.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner

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

(COMPANY NAME)

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

END OF SECTION 01740

SUBCONTRACTOR WARRANTY FORM

PROJECT: TUGALO STREET GREENSPACE

LOCATION: TOCCOA, GEORGIA

OWNER: CITY OF TOCCOA

GENERAL CONTRACTOR:

We \_\_\_\_\_, subcontractor  
(Company Name)

for \_\_\_\_\_, as described in Specification Section (s)  
(list trade)

\_\_\_\_\_ do hereby warrant  
(list appropriate sections of specifications)

that all labor and materials furnished and work performed in conjunction with the above referenced project are in accordance with the Contract Documents and authorized modifications thereto, and will be free from defects due to defective materials or workmanship for a period of one year from Date of Substantial Completion.

This warranty commences at 12:00 noon on \_\_\_\_\_  
\_\_\_\_\_ and expires at 12:00 noon on \_\_\_\_\_. Should by

any defect develop during the warranty period due to improper materials, workmanship or arrangement, the defect shall, upon written notice by the Owner, be repaired or replaced by the undersigned at no expense to the Owner.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner.

DATE: \_\_\_\_\_ FOR: \_\_\_\_\_  
(COMPANY NAME)

BY: \_\_\_\_\_  
TITLE: \_\_\_\_\_

END OF SECTION 01 741

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers site work layout, protection of existing items to remain, site clearing and grubbing.

Site Conditions: Contractor shall visit the site, familiarize himself with actual conditions, and verify existing conditions in the field.

Contractor shall stake all property lines at 50' intervals. Stakes shall be 2" X 2" X 4' and marked property line. Provide white flagging on each stake.

1.02 LAYOUT WORK

- A. Layout work shall be done under supervision of a registered professional or person familiar with construction layout work.

1.03 TREE SAVE

- A. Contractor shall make every effort possible to save existing trees. The Contractor shall limit his clearing operations and equipment movement to within the "Limits of Work" and shall not disturb the existing terrain or trees outside the work area.

1.04 MAINTENANCE

- A. Maintain carefully all bench marks, monuments and other reference points. If disturbed or destroyed, replace as directed. If found at variance with drawings, notify Architect before proceeding with layout work.

1.05 JOB CONDITIONS

- A. Locate storage sheds, temporary office, and stockpile topsoil so as to best advance progress of work, and as approved by the Architect.

1.06 PUBLIC SAFETY

- A. Provide all safety fence barricades guards, lights and other installations required to protect persons and property during this part of the work. This shall be in addition to such protection required elsewhere in this specification.
- B. All work and storage areas shall be secured with temporary plastic safety fencing (as manufactured by services and materials company - Granger catalog #5W418 or approved equal). Contractor shall maintain plastic safety fencing daily to assure a complete barrier.

### 1.07 UTILITIES PROTECTION LAW (DIG LAW)

- A. Comply with Georgia Utilities Protection Law. Notice must be given to the Utilities Protection Center at least three (3) working days preceding the day the work (digging) is to begin. This notice must contain County (where project is located), City (or closest City or Town), location (street address), type of work to be done, name of Contractor, company name and address, telephone number, which company/individual (the work is being done for), date and time the Contractor is planning to dig.

## PART 2 - MATERIALS

### 2.01 ENGINEERING EQUIPMENT

- A. Surveyor's transit and measuring devices properly calibrated to accurately lay out the work shall be used.

### 2.02 OTHER LAYOUT EQUIPMENT

- A. Provide stakes and batter boards of size and quality commensurate with function. Use wire or non-stretching cord to establish reference lines for site clearing and grading.

### 2.03 PROTECTION MATERIALS

- A. Materials for protection of trees and other existing work remaining shall be treated wood and/or exterior plywood of size, strength, and extent to provide protection of existing work remaining.

## PART 3 - EXECUTION

### 3.01 LAYOUT

- A. Before the work is started, the Contractor shall stake out the entire control lines of work and establish bench marks and reference points. This work shall be examined by the Architect, and on his approval the Contractor shall complete the staking.
- B. The Contractor shall be responsible for all grade stakes and line stakes during the grading and filling operations, resetting all grade stakes and line stakes destroyed.
- C. Contractor shall verify all benchmarks, property corners and property lines (bearings and distances) prior to construction. Contractor shall stake all property corners and all property lines every 50' with 2" x 2" x 4' long stakes. Stakes shall be labeled property line and marked with white flagging.

3.02 EROSION CONTROL

- A. Prior to the starting of any Work, install a silt fence as shown on the plans. Maintain fence in place during full construction period. Install silt fence in accordance with manufacturer's recommendations. Inspection of the silt fence shall be daily, and repair or replacement must be made promptly, as required. The sediment behind the fence must be removed when it reaches the mid-point of the fabric height. Protection shall be removed only after approval is given by the Landscape Architect. Removal of erosion control measures is to be carried out by the Contractor who installed the measures.

3.03 SITE CLEARING

- A. General: Remove vegetation, improvements, or obstructions interfering with installation of new construction and within limits indicated on the Drawings. Remove such items elsewhere on site or premises as specifically indicated. Removal includes digging out stumps and roots. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction.
- B. Clearing and Grubbing: Clear site of trees, shrubs, and other vegetation, except for those indicated to be left standing. Completely remove stumps, roots, and other debris protruding through ground surface. Use hand methods for grubbing inside the drip line of trees to remain. Strip grass materials to a maximum depth of 1" under tree canopies. Carefully till or scarify existing grade to a depth of 1".
- C. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 6" loose depth, and thoroughly compact to a density equal to adjacent original ground.
- D. Positive drainage must be maintained or installed by the Contractor to insure that storm water runoff flows to the proper drainage structure or swale.
- E. Restore all areas disturbed by construction activities and which are outside the limits of clearing as indicated on the drawing to their original condition. The expense for this Work will be borne by the Contractor. The Work must be in accordance with the directions of the Architect.

3.04 GRUBBING

- A. Grubbing shall include the removal and proper disposal of all stumps, roots, and other vegetation or perishable matter that exists below the original ground surface. All sound, unsound or decayed stumps shall be removed to a depth of two (2) feet below the original ground.



### 3.05 STRIPPING TOPSOIL

- A. Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4". Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2" in diameter, and without weeds, roots, and other objectionable material. Strip topsoil to its full depth at all areas to be re-graded, re-surfaced, or paved in a manner to prevent intermingling with underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping. Where trees are indicated to be left standing, stop topsoil stripping at drip line, unless directed otherwise, to prevent damage to main root system. Stockpile topsoil in storage piles in a location acceptable to the Landscape Architect. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent wind-blown dust. Maintain topsoil storage piles separate from other stockpiled soil materials.

### 3.06 REMOVAL OF MATERIALS

- A. The removal and disposal of all cleared and grubbed materials shall be the responsibility of the Contractor. All matter shall be removed from the site. Material that is removed from the site shall be disposed of at a location which is approved by the Architect. No material of clearing and grubbing operations shall be pushed or placed in areas which are not to be cleared. No material of clearing or grubbing shall be burned. This item also includes the removal and proper disposal of any obstructions not to be salvaged, such as fences and poles, and incidental structures within the construction area which might interfere with construction.
- B. Contractor shall be responsible for complying with all local ordinances and obtaining the necessary permits for disposing of trees, stumps, and other debris. There shall be no burial on site.

END OF SECTION 02 100

PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

## 1.2 DESCRIPTION OF WORK

- A. Extent of clearing and grubbing work includes, but is not limited to the following:
  - 1. It is the intent of this section to limit the area of clearing and grubbing to the minimum area possible to allow for the proper installation of the work and to preserve all plantings, trees, shrubs, grass, and natural vegetation to the maximum extent possible.
  - 2. Remove all trees, plants, undergrowth, shrubs, brush, other vegetation, and debris within limits indicated on the Contract Drawings.
  - 3. Protect existing trees and plants scheduled to remain.
  - 4. Remove all fence, sidewalk, asphalt pavement, concrete pavement, utility structures, pipes, conduits, site lighting, and other items as indicated on the Contract Drawings.
  - 5. Properly dispose off-site all removed materials not designated to be reused or delivered to the owner.

## 1.3 QUALITY ASSURANCE

- A. Confine clearing and grubbing operations to within the following limits:
  - 1. All areas where work is required to be done, but, to the minimum extent possible to properly install the work.
  - 2. Within the grading limits when shown on the Drawings.
- B. No trees, plants, shrubs, flowers, or vegetation shall be removed or trimmed without the prior permission of Architect/Engineer, except where otherwise specified or directed.

- C. Provide at least one person who shall be present at all times during clearing and grubbing operations who shall be thoroughly familiar with the following:
  - 1. The types of trees and plantings encountered.
  - 2. The proper procedures and methods for taking up and preserving trees and plantings.
  - 3. The proper procedures and methods for felling, trimming, pruning, and caring for trees and plants and their roots.
- D. Such person(s), firm(s), or subcontractor(s) must be totally familiar with this type of work, must be regularly engaged in similar work and shall be responsible for directing all work affecting trees, plantings, and vegetation.

#### 1.4 SUBMITTALS

- A. Name(s), address(es), and qualifications of person(s), firm(s), and subcontractor(s) required under paragraph 1.04C above.
- B. Label or catalog cut of pruning paint proposed for use.
- C. Contractor's schedule indicating dates upon which Contractor and Architect/Engineer will traverse the site to allow Contractor to indicate the trees and plantings which he has determined to be necessary to remove and to obtain Architect/Engineer's approval.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store trees, plants, and shrubs in protected areas and give ample water to keep them in a thriving condition for subsequent replanting.
- B. Store fences, signs, and other items at approved locations for subsequent reinstallation.
- C. Obstruction of roads, driveways, sidewalks, gutters, and drainage ditches, swales, and channels with stored materials is not permitted.

#### 1.6 JOB CONDITIONS

- A. Burning or burial of materials at the site is not permitted.
- B. Materials not specified to be stored or reused shall be promptly removed and disposed of off-site.

- C. The locations of trees, plantings, vegetation, sidewalks, curbs, fences, existing utilities and other living and non-living items, as shown on the drawings, have been determined by actual surveys at the time surveys were made. Since that time, additional items may have been built, some items may have been removed, and the condition of things may have changed. Carefully examine the site prior to bidding and become fully acquainted with the existing conditions as the contract price includes the cost for removing and replacing all obstacles and obstructions, as required, whether shown on the Drawings or not.
- D. Use all means necessary to protect existing objects designated to remain and, in the event of damage, immediately make all necessary repairs and replacements.

#### 1.7 SCHEDULING

- A. Avoid interference with the use of, and passage to and from, adjacent properties, buildings, facilities, driveways, walks, drainage systems, and roads etc.
- B. Pavements which are required to be removed, including highways, driveways and walks, may be saw cut in advance, but do not remove until the work is ready to be installed.
- C. Do not remove signs, guide rails, and all other control, safety and warning devices until just prior to the installation of the work.
- D. Do not remove fences until the property owners affected are notified at least four days in advance of such removal. Unless written permission from a fence owner is received, do not remove a fence more than 48 hours in advance of the installation of the work affecting the fence.
- E. It is the intent of this section that all items affecting traffic, safety, lives, and the containment of humans and animals and all items essential to the protection of property or the operation of a business be left in place as long as possible and replaced as soon as possible when such items must be removed.
- F. The Contractor shall take precautions to protect from harm the work of other contractors on-site, existing facilities and adjacent properties. The Contractor shall be responsible for all damage or injury done to pipes, structures, pavement, property or person as a result of excavations required to complete the work. The Contractor shall at his own expense repair any such damage to the satisfaction of the property owner, public agency having jurisdiction and/or Architect/Engineer.

PART 2 - PRODUCTS

## 2.1 PRUNING PAINT

- A. Asphalt base paint specially formulated for horticultural application to cut or damaged plant tissue.

## 2.2 EXPLOSIVES

- A. Explosives are not permitted for clearing and grubbing operations.

PART 3 - EXECUTION

## 3.1 INSPECTIONS

- A. Verify that all limiting boundaries such as permanent and temporary easements, property lines, rights-of-way and grading limits have been accurately located and clearly marked.
- B. Verify that pipeline routings and other items of work have been accurately located and clearly marked.

## 3.2 PREPARATION

- A. Mark all trees, plantings, and other objects which are deemed necessary to be removed, trimmed, cut or taken up and preserved.
- B. Notify and accompany Architect/Engineer through the site to inspect the items marked under Paragraph A, above. Describe which are to be trimmed, removed, and replanted and secure Architect/Engineer's approval.

## 3.3 CLEARING AND GRUBBING

- A. Clearing consists of cutting and disposing of all trees, down timber, stubs, brush, bushes, snags, vegetation, rubbish, debris, and other objectionable matter and materials and the removal and storage of fences, signs, walks, guide rails, curbs, and other items to be restored.
- B. The Contractor shall schedule and conduct his operations to minimize erosion of soils and to prevent silting and muddying of streams, rivers, wetlands, impoundments and land adjacent to or affected by the work. Erosion control measures shall be implemented and the area of soil exposed by construction at any one time should be kept to a minimum. Final restoration should be carried out as soon as possible following completion of construction.

- C. Grubbing consists of the removal and disposal of all stumps, roots, duff, grass, turf, sod, debris, vegetation, foundations, buried structures and pipes, as well as other objectionable matter and materials.
- D. All operations shall be done in a manner so that present growth will blend with the limits of construction and a natural appearance will be attained.
- E. Use hand method for grubbing inside the drip line of trees to remain. Strip grass materials to a maximum depth of 1-inch. Remove stumps and roots to their full depth within 5-feet of underground structures, utility lines, footings and paved areas. Remove stumps and roots to a clear depth of 5-feet below subgrade in other locations.

### 3.4 TREES AND PLANTINGS

- A. In grassed, planted, and open areas, do not remove or trim trees or plantings without the prior permission of Architect/Engineer. Take-up and preserve small trees, plantings, flowers, and similar vegetation for reuse.
- B. In wooded areas, trees may be removed and/or trimmed, as required, for the proper installation of the work. Gross and unnecessary removal of trees is not permitted.
- C. If it is impractical to fell trees as a whole, remove them in sections according to standard practices of professional tree removal. Fall trees to the center of the area being cleared to minimize damage to trees that are to be left standing.
- D. Immediately after felling a tree, remove branches, cut trunk and limbs, and remove all materials from the site.
- E. All trees to remain shall not come in contact with any machine or appliance that will in any manner injure, sear, or kill them.
- F. All merchantable timber and wood, which is removed, shall become the property of the Contractor.
- G. All trees left standing, which have been trimmed or become scarred by Contractor's operations, shall be promptly repaired by properly cutting, smoothing, and painting.
- H. Trees to be trimmed shall be evenly cut to achieve neat severance with the least possible damage to the trees.
- I. Where roots are cut or damaged, apply wet burlap to prevent drying out.

### 3.5 PAVEMENTS, WALKS, AND CURBS

- A. Remove existing pavements, walks, and curbs to the limits shown on the Drawings, or if not shown, to the minimum extent possible.
- B. Saw cut asphalt and concrete paved surfaces before removal. Use a saw which will cut a neat, straight joint line.
- C. Carefully remove walks and curbs to the minimum extent possible. Store and protect for reuse.

### 3.6 FENCES AND OTHER OBSTRUCTIONS

- A. All fences, signs, and other obstructions encountered shall be carefully taken-up and stored for subsequent replacement.
- B. Do not disturb property markers unless absolutely necessary. If it becomes necessary to disturb or remove a property marker, have a licensed land surveyor provide four (4) ties to the marker. The licensed land surveyor shall replace the marker as soon as possible.
- C. Remove and dispose of all other obstructions which will affect the work or which are specifically designated to be removed.

### 3.7 UNDERGROUND STRUCTURES AND UTILITIES

- A. Remove and dispose off-site underground structures and piping indicated for removal on the Contract Drawings.

### 3.8 DISPOSAL

- A. Burning or burial of materials at the site is not permitted.
- B. All materials shall be promptly removed and disposed of away from the site.
- C. Methods of disposal shall conform to the requirements of all Federal, State, and Local laws and ordinances.
- D. Leave site in a neat and orderly condition.

### 3.9 PROTECTION

- A. Carefully protect and guard all trees, shrubs, and vegetation to remain. Protect designated trees with temporary wood snow fence enclosure. Provide a minimum 8-foot radius from center of tree trunk. Increase enclosure size as directed for larger trees. Maintain fencing during full construction period. Remove temporary fencing when no longer needed or when acceptable to the Architect/Engineer.

- B. Take every precaution to avoid damage to utilities, buildings, and other property.
- C. Injured or damaged trees shall be repaired in accordance with the TREES AND PLANTINGS section and as acceptable to the Architect/Engineer.
- D. All trees, shrubs, or plantings which are taken-up for subsequent reuse, and die, shall be replaced with first class balled and burlapped nursery grown representatives of the same species and caliber at the expense of the Contractor.
- E. Contractor shall bear the cost of repair and replacement of trees scheduled to remain that are damaged or removed by construction operations.

END OF SECTION 02 110



PART 1 GENERAL

## 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.02 SUMMARY OF WORK

- A. This Section includes earthwork as shown on the drawings and specified herein. Included is:
  - 1. Preparation of subgrade for walks and pavement.
  - 2. Preparation of granular base for pavement.
  - 3. Excavation and backfilling for utilities systems.
  - 4. Excavation and backfilling for structure footings, foundations, and retaining walls.
  - 5. Site grading and filling to indicated elevations.

## 1.03 SUBMITTALS

- A. Test Reports: Submit copies of following reports directly to the Landscape Architect
  - 1. Test reports on borrow material.
  - 2. Field density test reports.
  - 3. One optimum moisture-maximum density curve for each type of soil encountered.
- B. Based on testing service reports and inspection, subgrade or fills which have been placed at below specified density, provide additional compaction and testing at no additional expense to Owner.

#### 1.04 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork and site grading in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Services: Owner will engage testing and inspection service, to include testing of soil materials proposed for use in work and field facilities for quality control testing during earthwork and site grading operations. All test reports must be signed by a licensed engineer.
- C. Tests for Proposed Soil Materials: Test soil materials proposed for use in work and promptly submit test result reports. Provide one optimum moisture-maximum density curve for each type of soil encountered in subgrade fills. Determine the maximum densities in accordance with ASTM D 698. Testing service will determine suitability of materials to be used as fill. For borrow materials, perform a mechanical analysis (ASTM 422), plasticity index (ASTM 424), moisture-density curve (ASTM D 698).

#### 1.05 PROJECT CONDITIONS

- A. Subsoil: Promptly notify soil testing service of unsuitable sub-surface conditions.
- B. Existing Utilities: Locate existing underground utilities in areas of work before starting earthwork operations. Where utilities are to remain in place, provide adequate means of protection during earthwork operations. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner, and public and private utility companies, in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when permitted in writing by Landscape Architect/Engineer and then only after acceptable temporary utilities services have been provided. Demolish and completely remove from site underground utilities indicated to be removed. Coordinate with local utility companies for shut-off of services if lines are active.
- C. Use of Explosives: Use of explosives is not permitted.
- D. Temporary Protection: Barricade open excavations made as part of earthwork operations and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction. Protect bottoms of excavations and soil beneath and around foundations from frost and freezing. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods, as required to prevent cave-ins or loose dirt from entering excavations.

## PART 2 PRODUCTS

### 2.01 SOIL MATERIALS

- A. Backfill and Fill Materials: Use satisfactory soil materials, complying with the American Association of State Highway and Transportation Officials (AASHTO) Designation M145, soil classification groups A-1, A-2-4, A-2-5, and A-3. Fill to be free of rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable, and other deleterious matter, as determined by the soils testing service.
- B. Granular Base: Properly graded mixture of natural or crushed gravel or crushed stone that will readily compact to required density. Use material complying with applicable sections of the current edition of "Georgia Department of Transportation Standard Specifications for Construction of Roads and Bridges".

## PART 3 EXECUTION

### 3.01 EXCAVATION

- A. General: Establish extent of grading and excavation by area and elevation. Designate and identify datum elevation and project engineering reference points. Set required lines, levels and elevations. Obtain approval from the Architect.
- B. Excavation Classifications: The following classifications of excavation will be made when unanticipated rock excavation is encountered in work. Do not perform such work until material to be excavated has been cross-sectioned and classified by soils testing laboratory. Rock excavation will be paid for at established unit prices, upon approval of Architect.
- C. Earth excavation includes removal and disposal of pavements and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and other materials encountered that are not classified as rock excavation or unauthorized excavation.
- D. Rock excavation consists of removal and disposal of materials encountered that cannot be excavated with a 3/4 cubic yard capacity power shovel without drilling, or continuous use of a ripper or other special equipment, except such materials that are classified as earth excavation.
- E. Trench rock excavation consists of removal and disposal of material classified as rock where the least horizontal dimension of required

excavation is greater than three feet. Intermittent drilling that may be performed to increase production and is not necessary to permit excavation of material encountered will be classified as earth excavation.

- F. Mass rock excavation consists of removal and disposal of material classified as rock where the least horizontal dimension of required excavation is greater than three feet. Intermittent drilling that may be performed to increase production and is not necessary to permit excavation of material encountered will be classified as earth excavation.
- G. Rock payment lines are limited to the following:
  - 1. Two feet outside of concrete work for which forms are required, except footings.
  - 2. One foot outside perimeters of footings.
  - 3. In pipe trenches, 6" below invert elevation of pipe and 2' wider than the outside diameter of pipe, but not less than 3' minimum trench width.
  - 4. Near outside dimensions of concrete work where no forms are required.
  - 5. Under slabs on grade, 6" below bottom of concrete slab.
- H. Unauthorized excavation consists of removal of materials beyond indicated elevations or side dimensions without the specific direction of the Architect. Replace unauthorized excavation by backfilling and compacting as specified for authorized excavations of same classification, unless otherwise directed by Architect.
- I. There will be no additional compensation for excavation, backfilling, concrete fill, or other cost due to unauthorized over-excavation in any direction. The Contractor is responsible for all additional testing costs associated with over-excavation.
- J. Quoted unit prices shall include full compensation for labor, materials, tools, equipment, and incidentals required for excavation, trimming, shoring, de-watering, backfilling, compacting, and other necessary items for complete installation.
- K. Unit prices for the following items, as set forth in the form of Proposal and as provided in the General Conditions, will apply in the event additions to the work are required and authorized by a written order from the Architect to the Contractor.

1. Mass Rock Excavation (per cu. yd.)
  2. Trenched Rock Excavation (per cu. yd.)
- L. Additional Excavation: When excavation has reached required subgrade elevations, notify soil testing laboratory to allow for inspection of conditions. If unsuitable materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by soils testing laboratory.
- M. De-watering: Prevent surface water and subsurface or ground water from flowing into excavations, and flooding project site and surrounding area. Do not allow water to accumulate in excavations. Remove water from excavations to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other de-watering system components necessary to convey water away from site. Convey water removed from excavations and rain water to collecting or run-off areas. Do not use trench excavations for site utilities as temporary drainage ditches.
- N. Material Storage: Stockpile excavated materials classified as satisfactory soil material where directed, until required for fill. Place, grade and shape stockpiles for proper drainage. Maintain excavated soil materials separately from topsoil stockpile. Dispose of excess unsatisfactory soil material, trash and debris, as specified.
- O. Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations, and grades as shown.
- P. Excavation for Trenches: Dig trenches to uniform width required for particular item to be installed, sufficiently wide to provide working room. Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations.

### 3.02 COMPACTION

- A. General: Control soil compaction during construction, providing the minimum percentage of density specified for each area classification.
- B. Percentage of Maximum Density Requirements: Compact soil to not less than following percentages of maximum dry density for soils which exhibit a well-defined moisture density relationship determined in accordance with ASTM D 698; and not less than following percentages of relative density,

determined in accordance with ANSI/ASTM D 4318, D 4253 AND D 4254, for soils which will not exhibit well-defined moisture-density relationship

1. Unpaved Areas within Park: Compact top 6" of subgrade and each layer of backfill or fill material to not less than 90% of the maximum dry density.
  2. Walkways: Compact top 6" of subgrade and each layer of backfill or fill material to not less than 95% of the maximum dry density.
  3. Pavements and Slabs-on-Grade: Compact top 12" of subgrade and each layer of backfill or fill material to not less than 95% of the maximum dry density.
- C. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

### 3.03 BACKFILL AND FILL

- A. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.
- B. Placement and Compaction: Place backfill and fill materials in layers not more than 8" in loose depth for material compacted by heavy compaction equipment, and not more than 4" loose depth for material compacted by hand-operated equipment. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content of soil material. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice. Backfill excavations as promptly as work permits, but not until completion of inspection, testing, approval, and recording location of underground utilities, as required.

### 3.04 GRADING

- A. General: Uniformly grade areas within limits of site grading under this section, including adjacent transition areas. Smooth finished surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

Degree of finish required will be that ordinarily obtainable from either blade-grader or scraper operations.

- B. Grading Around Trees: Where excavating, filling, or grading is required within branch spread of trees that are to remain, perform work as follows

When trenching occurs around trees that are to remain, the tree roots shall not be cut but the trench shall be tunneled under or around the roots by careful hand digging and without injury to the roots.

- C. Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 1" above or below required subgrade elevations, compacted as specified, and free from irregular surface changes.
- D. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/4" above or 1" below the required subgrade elevation, compacted as specified, and graded to prevent ponding of water after rains.
- E. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2" above or below required subgrade elevation, compacted as specified, and graded to prevent ponding of water after rains. Include such operations as plowing, dicing, and any moisture or aerating required to provide optimum moisture content for compaction. Fill low areas resulting from removal of unsatisfactory soil materials, obstructions, and other deleterious materials, using satisfactory soil material. Shape to line, grade, and cross-section as indicated.

### 3.05 PAVEMENT SUBBASE COURSE

- A. General: Subbase course consists of placing subbase course material, in layers of specified thickness, over subgrade surface to support a pavement base or surface course. See other Division - 2 sections for paving specifications.
- B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.
- C. Placing : Place subbase course material on prepared subgrade conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.

### 3.06 MAINTENANCE

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape and compact to required density prior to further construction.

### 3.07 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Removal from Owner's Property: Remove waste materials, including excavated material classified as unsatisfactory soil material, trash and debris, and dispose of it off Owner's property.

END OF SECTION 02200



## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to work of this section.

### 1.2 WORK OF THIS SECTION

- A. Work covered in this section includes the control of erosion, siltation, and sedimentation. The Sediment and Erosion Control drawing indicates the minimum contract requirements for Erosion Control. The Contractor and the Architect shall work together to determine the need for any additional Erosion Control.

### 1.3 RELATED WORK SPECIFIED ELSEWHERE

Division 2 Section, "Clearing and Grubbing"  
Division 2 Section, "Earthwork"  
Division 2 Section, "Exterior Landscape"

### 1.4 PROJECT REQUIREMENTS

- A. Take every reasonable precaution and do whatever is necessary to avoid any erosion and to prevent silting of rivers, streams, impoundments, and drainage ditches, and swales.
- B. The exposure of uncompleted cut slopes, embankments, trench excavations, and site graded areas shall be kept as short as possible. Initiate seeding and other erosion control measures on each segment as soon as reasonably possible.
- C. Should it become necessary to suspend construction for any length of time, shape all excavated and graded areas in such a manner that runoff will be intercepted and diverted to points where minimal erosion will occur. Provide and maintain temporary erosion and sediment control measures, such as berms, dikes, slope drains, silt stops, and sedimentation basins, until permanent drainage facilities and erosion control features have been completed and are operative.
- D. Fine material placed or exposed during the work shall be handled and treated as to minimize the possibility of its reaching any surface waters. Use diversion channels, dikes, sediment traps, or any other effective control measures.
- E. Provide silt stops wherever erosion control measures may not be very capable of controlling erosion, such as in drainage channels and where slopes may exist.
- F. Before water is allowed to flow in any ditch, swale, or channel, install the permanent erosion control measures in the waterway so that the waterway will be safe against erosion.
- G. Take special precautions in the use of construction equipment to minimize erosion. Do not leave wheel tracks where erosion might begin. Prevent direct discharge from dewatering

pumps and surface runoff from the construction sites to storm sewers, culverts, streams or ditches. Intercept and conduct surface runoff and discharge from dewatering pumps to siltation ponds before discharging to natural drainage channels.

- H. Disturbance of lands and waters outside the limits of construction is prohibited, except as may be found necessary and approved by the Architect.
- I. The requirements of this section also apply to project-related construction activities away from the project site, such as at borrow pits, off-site storage areas, and haul and work roads.
- J. Mulching shall follow the seeding operation by not more than 24 hours.
- K. Should any protective measures employed indicate any deficiencies or erosion-taking place, immediately provide additional materials or employ different techniques to correct the situation and to prevent subsequent erosion.
- L. Continue erosion control measures until the permanent measures have been sufficiently established and are capable of controlling erosion on their own.
- M. Comply with all federal, state, and local laws, ordinances, rules, and regulations.
- N. Comply with Federal Clean Water Act, including the requirements of Georgia's NPDES General Permit for construction.

## 1.5 QUALITY CONTROL

- A. Provide at least one person who shall be present at all times during erosion control operations and who shall be thoroughly familiar with the types of materials being installed and the best methods for their installation and who shall direct all work performed under this section.
- B. Material manufacturers and vendors shall be reputable, qualified firms regularly engaged in producing the required types of materials.
- C. Protect and maintain all areas disturbed by the work, such that erosion is adequately controlled and silt and sediments are not allowed to flow into any watercourse, onto adjacent properties, or into storm drains.

## PART 2 - PRODUCTS

### 2.1 HAY AND STRAW MULCH

- A. General: Hay and straw mulches shall be reasonably free from swamp grass, weeds, twigs, debris, and other deleterious material, and free from rot, mold, primary noxious weed seeds, and rough or woody materials. Mulches containing mature seed of species which would volunteer and be detrimental to the permanent seeding, or would result in over seeding, or would produce growth which is aesthetically unpleasing, is not permitted.

- B. Hay Mulch: Properly aired native hay, Sudan grass hay, broomsedge hay, legume hay, or similar hay or grass mowings. When air-dried in the loose state, the contents of the representative bale shall lose not more than fifteen (15) percent of the resulting air-dry weight of the bale. Apply at the rate of 2 to 3 tons/acre, or at 1.5 tons/acre when a net or a mulch stabilizer is used with the mulch.
- C. Straw Mulch: Threshed plant residue of oats, wheat, barley, rye, or rice from which grain has been removed. Apply at the rate of 2 to 3 tons/acre or at 1.5 tons/acre when a net or a mulch stabilizer is used with the mulch.
- D. Mulch Stabilizers: "Curasol" applied at the rate of 40 gallons/acre, Dow "Mulch Binder" applied at the rate of 45 gallons/acre, or asphalt binder, AASHTO M140, Type SS-1 or RS-1 as applicable, applied at the rate of 400 gallons/acre.
- E. Temporary Type Mulch Nets: Paper yard, approximately 0.05" in diameter, woven in to a net with approximate openings of 7/8" by 1/2" and weighing about 0.20 lbs./sy.
- F. Permanent Type Mulch Nets: "Vexar" or "Erosion-Net" plastic or nylon mesh netting with approximate openings of 3/8" by 3/4".

## 2.2 MATTING/BLANKETS

- A. Nomenclature: The various materials under this paragraph are sometimes referred to as "matting" and "blankets". These words are interchangeably used throughout this section, but the meanings shall be the same.
- B. Jute Matting: Undyed and unbleached jute yarn woven into a uniform open, plain weave mesh, furnished in rolled strips conforming to the following physical requirements:

Width : 48",  $\pm 1$ "  
: 78 warp ends per width of cloth  
: 41 weft ends per yard  
Weight: 1.22-1.80 lbs./LY,  $\pm 5\%$

- C. Excelsior Matting: Uniform web of interlocking wood excelsior fibers with a backing of mulchnet fabric on one side only. The mulchnet shall be woven of either twisted paper chord or cotton cord. Excelsior matting shall be furnished in rolled strips and shall conform to the following physical requirements:

Width : 36",  $\pm 1$ "  
Weight: 0.80 lbs./SY,  $\pm 5\%$

- D. Staples: No. 11 (or heavier) plain iron wire made from at least 12" lengths of wire bent to form "U" of 1½" to 2" width. Use longer staples for loose soils or where otherwise required.

## 2.3 HYDROMULCHES

- A. Hydromulches are not permitted where the slope of the ground surface exceeds 10 percent.

B. Wood fiber mulch with tackifier. Apply wood fibers at the rate of 500 lbs./acre and tackifier at the rate of 40-45 gallons/acre.

C. Paper mulch applied at the rate of 1,200 lbs./acre.

## 2.4 HAY BALES FOR EROSION CONTROL

A. Rectangular shaped bales of hay or straw, weighing at least 40 pounds per bale, free from primary noxious weed seeds and rough or woody materials.

## 2.5 SILT FENCES

A. Filter cloth shall be as manufactured to meet the following requirements:

### 1. Silt Fence Fabric:

<u>Fabric Properties</u>	<u>Minimum Acceptable Value</u>	<u>Test Method</u>
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (lbs)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D3786
Slurry Flow Rate (gal/min/sf)	0.3	
Equivalent Opening Size	40-80	US Std. Sieve SW-02215
Ultraviolet Radiation Stability (%)	90	ASTM G-26

B. Other materials shall be as defined on the silt fence detail shown on the Contract Documents.

C. Pre-assembled silt fence, which is complete with U.V., stabilized filter fabric (minimum 36-inch) high-strength polypropylene netting and pre-attached hardwood stakes may also be used. The preassembled reinforced silt fence.

## 2.6 STABILIZED CONSTRUCTION ENTRANCE

A. As Shown on the Plans.

## 2.7 CHECK DAMS

- A. Light Stone Fill - Material shall be graded stone filling.

## 2.8 TEMPORARY SEDIMENT TRAP

- A. Clear, grub and strip the area to be excavated of all vegetation and root mat.
- B. Stone check dam or other pipe outlet with seepage collar shall be provided.

## PART 3 - EXECUTION

### 3.1 HAY AND STRAW MULCHING

- A. Install hay or straw mulch immediately after each area has been properly prepared. When permanent seed or seed for erosion control is sown prior to placing the mulch, place mulch on seeded areas within 24 hours after seeding. Architect may authorize the blowing of chopped mulch provided that 95 percent of the mulch fibers will be 6" or more in length and that it can be applied in such a manner that there will be a minimum amount of matting that would retard the growth of plants. Hay mulch should cover the ground enough to shade it, but the mulch should not be so thick that a person standing cannot see the ground through the mulch. Remove matted mulch or branches.
- B. Where mild winds may blow the mulch, or when ground slopes exceed 15 percent, or when otherwise required to maintain the mulch firmly in place, apply a system of pegs and strings, a chemical stabilizer, or temporary type netting to the mulch. Unless otherwise directed, remove the strings and netting prior to the acceptance of the work.
- C. Where high winds exist, or heavy rainstorms are likely, or where ground surfaces are steep, or where other conditions require, apply temporary type netting over the mulch and take whatever measures are necessary to maintain the mulch firmly in place.
- D. Unless otherwise specified, the use of permanent type netting is not permitted without the prior approval of the Architect/Engineer.

### 3.2 MATTING/BLANKETS - GENERAL

- A. The use of mulch with matting is not permitted, however, a 4" to 6" overlap of mulch over the edge of matting is permissible.
- B. Prepare surfaces of ditches and slopes to conform to the grades, contours and cross sections shown on the Drawings and finish to a smooth and even condition with all debris, roots, stone, and lumps raked out and removed. Loosen the soil surface to permit bedding of the matting. Unless otherwise noted, seed prior to the placement of the matting.
- C. Unroll matting parallel to the direction of flow of water and loosely drape, without folds or stretching, so that continuous ground contact is maintained.

- D. The ditches and swales, and on slopes, each upslope and each downslope end of each piece of matting shall be placed in a 6" trench, stapled at 12" on center, backfilled, and tamped. Similarly, bury edges of matting along the edges of catch basins and other structures. Architect may require that any other edge, exposed to more than normal flow of water, be buried in a similar fashion.
- E. Tightly secure matting to the soil by staples driven approximately vertically into the ground, flush with the surface of the matting. In driving the staples, take care not to form depressions or bulges in the surface of the matting.
- F. Decrease the specified spacing of staples when varying factors, such as the season of the year or the amount of water encountered or anticipated, requires additional anchoring.
- G. Refer to the following paragraphs for additional requirements on the placement and stapling of matting.

### 3.3 EXCELSIOR MATTING

- A. Where strips of excelsior matting are laid end to end, butt the adjoining ends.
- B. When adjoining rolls of excelsior matting are laid parallel to one another, butt the matting snugly.
- C. On slopes flatter than 1:4, place staples not more than 3 feet apart in three rows, for each strip, with one row along each edge and one row alternately spaced down the center. On grades 1:4 or steeper, place staples in the same three rows, but spaced 2 feet apart. Ends of matting shall have staples placed every foot. Matting placed adjacent to boulders or other obstructions shall be stapled with no spaces between the staples.

### 3.4 EROSION CONTROL MULCHING BLANKET

- A. Where one roll ends and a second roll begins, the upslope piece shall be brought over the end of the downslope roll so that there is a 12-inch overlap, placed in a 4-inch deep trench, stapled at 12 inches on center, backfilled, and tamped.
- B. On slopes where two or more widths of blanket are applied, the two edges shall be overlapped 4 inches and stapled at 12-inch intervals along the exposed edge of the lap joint.
- C. Staple the body of the blanket in a grid pattern with staples 3 feet on center, each way.

### 3.5 SEED FOR EROSION CONTROL

- A. Sow seed when soils are moderately dry and when wind does not exceed five miles per hour or as directed by the Architect/Engineer.
- B. Areas, which will be regraded or otherwise disturbed later during construction, may be ordered to be seeded with rye grass to obtain temporary control. The seed shall be sown at the rate of approximately one pound per 1,000 square feet, on the pure live seed basis.

### 3.6 HAY BALES AND SILT FENCES

- A. Provide hay bales or silt fences, as required, for the temporary control of erosion and to stop silt and sediment from reaching surface waters, adjacent properties, or entering catch basins, or damaging the work.
- B. Stake the hay bales to hold them firmly in place. Use a sufficient number of bales to accommodate runoff without causing any flooding and to adequately store any silt, sediment, and debris reaching them.
- C. Erect silt fences and bury bottom edge in accordance with the manufacturer's recommended installation instructions. Provide a sufficient length of fence to accommodate runoff without causing any flooding and to adequately store any silt, sediment, and debris reaching it.
- D. Maintain and leave hay bales and silt fences in place until permanent erosion control measures have stopped all erosion and siltation.

### 3.7 STABILIZED CONSTRUCTION ENTRANCES

- A. Stabilized pads of aggregate underlain with filter cloth shall be constructed as shown on the Contract Drawings.
- B. Filter cloth shall be placed over the entire area to be covered with aggregate prior to placing of the stone.

### 3.8 CHECK DAMS

- A. Stone filling shall be placed in a manner that will produce a reasonable well-graded mass of stone with smaller fragments filling the space between the larger ones, to result in the minimum practicable percentage of voids.
- B. Inspect the check dams after each runoff event. Correct all damage immediately. Replace stones as needed to maintain cross sections of the structure.
- C. Remove sediment accumulated behind the dam as needed to allow swale/channel to drain through the stone check dam and prevent large flows from carrying sediment over the dams.
- D. Removed sediment shall be properly disposed of and in a manner not to erode.

### 3.9 TEMPORARY SEDIMENT TRAP

- A. Sediment traps shall be maintained throughout the duration of the contract or until the drainage area has been properly stabilized as approved by the Architect/Engineer.
- B. Sediment shall be removed and trap restored to its original dimensions when sediment has accumulated to 1/2 the design depth of the trap.
- C. Removed sediment shall be properly disposed of and in a manner not to erode.

- D. Inspect the sediment trap after each runoff event. Correct all damage immediately.

### 3.10 MAINTENANCE

- A. If any staples become loosened or raised, or if any matting becomes loose, torn, or undermined, or if any temporary erosion and sediment control measures are disturbed, repair them immediately.
- B. If the seed is washed out before germination, repair any damage, refertilize, and reseed.
- C. Maintain mulched and matted areas, silt stops, and other temporary control measures until the permanent control measures are established and no further erosion is likely.
- D. All sediment spilled, dropped, or washed onto the driveway or public right-of-way shall be removed immediately.
- E. Maintain ditches and swales at all times, so that they effectively drain. Refill, reshape, and re-compact where ruts or erosion occurs.
- F. Maintain areas temporarily seeded including repair of all damages, re-seeding, and refertilizing.

END OF SECTION 02 270



PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish labor, materials and equipment required to complete all paving, resurfacing and preparation of subgrade for all areas to receive paving and other items necessary to complete the work as outlined on the drawings.
- B. Trenching excavations for mechanical, electrical and other disturbed areas shall be backfilled and compacted as specified prior to application of asphalt paving.

1.02 REFERENCE STANDARDS

- A. Materials and methods of construction of base and pavement shall conform to the requirements of Georgia State Highway Specifications for Construction of Roads and Bridges, 1983 Edition, with 1989 Supplement.

1.03 JOB CONDITIONS

- A. Store materials only in areas designated for Contractor's use.
- B. Paving operations shall not begin until all underground work of other grades has been completed and all storm drainage structures raised as required in areas which are to be paved.
- C. Verify all grades and elevations shown on drawings before proceeding with work. While grades and elevations will, in general, conform to those shown on drawings, the Architect reserves the right to make minor modifications by reasonable field adjustments prior to completion of subgrade work.
- D. Asphalt paving shall be done in dry weather when subgrade is sufficiently stable to be properly compacted. Ground moisture shall not be sealed under paving. All work shall be in accordance with applicable section of the Reference Standards.

1.04 SUBMITTALS

- A. Contractor shall submit design mix specification sheet for shop drawing review by architect.

PART 2 - MATERIALS

2.01 ASPHALTIC CONCRETE MIXTURES

- A. Asphaltic concrete mixtures shall conform to the following table: (see - Page 3)

## 2.02 CRUSHER RUN STONE

- A. Aggregate shall be crushed stone consisting of hard, durable rock fragments free from clay and reasonably free from flat, elongated or soft pieces of organic matter. Stone shall be graded as one hundred (100) percent passing the two (2) inch sieve.

## 2.03 PAVEMENT DESIGN

- A. Georgia D.O.T. Improvements – All work within State highway right-of-way, Eight (8) inches base of crusher run, three (3) inches of "B" binder, and one and one half (1 1/2) inch of "F" topping. All the above depths measured after compaction.
- B. Medium Duty areas - Six (6) inches base of crusher run, two (2) inches of "B" binder, and one (1) inch of "F" topping. All the above depths measured after compaction.

## 2.04 PARKING LINE PAINT

- A. Parking line paint shall be in accordance with Section 870.03, No. 4 A Georgia DOT Standard Specifications. The color shall be white, except that light blue shall be used to identify all handicap areas.

# PART 3 - INSTALLATION

## 3.01 INSPECTION

- A. The paving sub-contractor shall examine all areas to be paved. Any defects which may adversely affect proper installation of this work shall be reported to the Architect in writing and shall have been corrected before start of this work. Beginning of work shall signify acceptance of surfaces by the paving sub-contractor.

## 3.02 SUBGRADE STABILIZATION

- A. The entire subgrade area shall be proofrolled as specified in Section 221, Georgia DOT Specifications. All defective areas that pump or shove, or are found to be soft, shall be removed and satisfactorily repaired, as specified below, and test rolled again as specified in Section 221 Georgia DOT Specifications. Subgrade shall be stabilized by spreading a minimum of one hundred fifty (150) pounds of crusher run stone per square yard, one hundred per cent passing the two-inch sieve, and thoroughly mixed into the top four (4) inches. All subgrade shall be shaped, rolled and thoroughly compacted.

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3.03 BASE

- A. Crusher run stone base, after compaction, shall be smooth and true to established profiles and sections and shall be of the average thickness of eight (8) inches for heavy duty areas, varying at no point by no more than three-eighths (3/8) inch from a true section.

## 3.04 BINDER COURSE

- A. A plant mix asphaltic concrete Type "B" Binder course shall be constructed three (3) inches thick or one and one half (1 ½) inches thick for paved areas, as identified above. Thickness shall be measured after compaction.

## 3.05 TACK COAT

- A. The binder surface, or area to be resurfaced, shall be swept clean of all debris. Apply a primer/tack coat of hot tar at the rate of four tenths (0.4) gallon per square yard.

## 3.06 TOP COURSE

- A. Following the binder course, and after sufficient time has passed to determine that the binder course and road base are performing properly, a plant mix asphaltic concrete type "F" top course shall be constructed one and one half (1 ½) inches thick or one (1) inch thick for paved areas, as identified above and thoroughly rolled evenly in place. Thickness shall be measured after compaction.

## 3.07 TESTING THICKNESS

- A. The Owner, at his option and at his expense, may make as many tests as necessary to determine the average thickness of the surface course. The average thickness of all specimens shall be at least the specified thickness of the surface course. In areas where there is a deficiency in the thickness of the course, the surface course shall be increased in thickness the amount of the average deficiency of all tests. If test show a deficiency of one quarter (1/4) inch or more in the surface course, the Contractor shall be required to place an additional surface course of one (1) inch in thickness. The failing tests shall be paid for by the Contractor.

## 3.08 PAINTED LINES ON BITUMINOUS PAVING

- A. Approximately two (2) calendar weeks after paving has been completed, parking lines shall be painted as originally on site or as called for on the plans. This shall include lines, arrows, handicap designations and all other required pavement painting as detailed.
- B. Paint four (4) inch wide strips. Paint shall be applied with the temperature at fifty (50) degrees Fahrenheit or above.
- C. Apply paint in one or more coats, by roller, spray or stripping machine to a minimum of fifteen (15) mils. Uneven lines will not be accepted.

- D. All work shall be done in accordance with Section 652.04, Georgia State Highway Department Standard Specifications.

### 3.09 CLEAN UP

- A. At the completion of the work, the Contractor shall clean up all scraps, rubbish and surplus materials caused by this work and haul them away from the site.
- B. Remove all asphaltic materials from adjacent surfaces and leave in neat, clean and orderly condition.

### 3.10 GUARANTEE

- A. Contractor shall provide the Owner with a one (1) year guarantee and maintenance agreement on all asphalt paving.

END OF SECTION 02 511

PART 1 GENERAL

1.01    RELATED DOCUMENTS

- A.     Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.02    SUMMARY OF WORK

- A.     Extent of Portland cement concrete paving is indicated on drawings.
- B.     Paving work includes, but is not limited to, the following:
  - 1.     Concrete walks.

1.03    SUBMITTALS

- A.     Mix Designs : Submit to Architect for each type of concrete used on project, in advance of proposed use.
- B.     Written Notification: 72 hours before commencement of work to coordinate inspection and approval of initial staking and installation.

1.04    QUALITY ASSURANCE

- A.     Reference Standards: Where the term "Referenced Standard" is used in these Project Specifications, it shall be interpreted as referring to the current edition of "Georgia State Highway Specifications for Construction of Roads and Bridges". Referenced Divisions of the "Standard" are hereby made a part of this Project Specification insofar as they may be termed applicable. In no case will requirements for "Method of Measurement" and "Basis of Payment" be considered as applicable to this Project Specification.
- B.     Testing and Inspection
  - 1.     Testing and Inspection Services: Owner will engage testing and inspection services, to include testing soil materials proposed for use during paving operations.
  - 2.     Field tests will be performed in conjunction with a proof rolling inspection of the prepared subgrade to verify that existing subgrade conditions are similar to those assumed in the design and therefore adequate for support of the pavement system.

- C. Do not change source or brands of material during the course of the work, without prior written approval of the Architect.

#### 1.05 JOB SITE MOCK-UP

- A. Furnish and install a 5'-0" x 5'-0" sample of concrete on-site. Sample must be representative of the materials and workmanship to be supplied in the finished work.
- B. Mock-up must contain sample joints and edges.
- C. The mock-up must remain in place until the acceptance of all special mix concrete.
- D. The mock-up and the review comments are the standard by which installed work will be examined.
- E. The approved mock-up may be a portion of the work and remain in place.

#### 1.06 INSPECTION AND APPROVAL OF WORK

- A. Before commencement of work, Contractor shall coordinate with Architect to arrange for inspection and approval of initial installation of slabs-on-grade. The approved initial installations shall serve as the standard to which all subsequent work shall adhere.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Base course materials shall be graded aggregate in compliance with the "Referenced Standard" and Division 2 Section "Earthwork."
- B. Concrete Materials: Comply with requirements of applicable Division 3 Section Cast-In-Place Concrete.
- C. Concrete Formwork: Comply with requirements of applicable Division 3 Section "Concrete Formwork."
  - 1. Forms: Steel, wood or other suitable material of size and strength to resist movement during placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.

2. Use flexible spring steel forms or laminated boards to form radius bends as required. The use of straight forms to create a segmented radius will not be accepted.
  3. Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.
- D. Concrete Reinforcement: Comply with requirements of applicable Division 3 Section "Steel Reinforcement for Concrete."
1. Reinforcing Bars: Deformed steel bars.
  2. Welded wire mesh: Welded plain cold-drawn steel wire fabric. Furnish in flat sheets, not rolls.
- E. Joint Dowel Bars: Plain steel bars, ASTM A615, Grade 60. Cut bars true to length with ends and free of burrs.
- F. Expansion Joint Materials: Comply with requirements of applicable Division 7 Section "Paving Sealants" for preformed expansion joint fillers and sealants.
1. Pre-molded Expansion Joint Filler: 1/2" wide x full depth, compatible with sealer. Joint filler to be left a minimum 1/2 inch, but no more than one inch below finish surface where joint sealer is indicated.
  2. Joint Sealant: Color to be approved by Architect.
- G. Pavement Sealer: Comply with requirements of applicable Division 7 Section "Water Repellents for concrete pavement sealer."

## 2.02 CONCRETE DESIGN AND TESTING

- A. Concrete Design: Comply with requirements of applicable Division 3 Section "Cast-In-Place Concrete" for concrete mix design, sampling and testing, and quality control.

## PART 3 EXECUTION

### 3.01 CONCRETE FORMWORK

- A. Surface Preparation: Remove loose material from compacted subbase surface immediately before placing concrete.

- B. Form Construction: Execute construction of concrete formwork in accordance with the "Reference Standard" and Division 3 Section "Concrete Formwork."
- C. Reinforcement: Execute construction of dowel bars and reinforcement in accordance with the "Referenced Standard" and Division 3 Section "Steel Reinforcement for Concrete." Locate and place reinforcement according to the drawings.
- D. Concrete Placement: Place concrete in accordance with Division 3 Section "Cast-In-Place Concrete."
- E. Joints: Construct expansion, contraction and construction joints true to line with face perpendicular to surface of concrete. Construct joints at right angles, unless otherwise indicated. Joint types and locations are shown on the drawings.
  - 1. Expansion Joints: Provide pre-molded joint filler for expansion joints abutting, but not limited to, concrete curbs, catch basins, manholes, inlets, structures, walks and other fixed objects, unless otherwise indicated.
  - 2. Contraction Joints: Provide contraction joints as shown on drawings. Joints may be tooled or saw cut as approved by the Architect.
  - 3. Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for more than 1/2 hour, except where such placements terminate at expansion joints.
- F. Concrete Finishing: Finish concrete in accordance with Division 3 Section "Special Concrete Finishes." Finish shall be in compliance with approved job site mock-up.
- G. Concrete Sealer: Seal concrete in accordance with Division 7 Section "Water Repellents." Application to be in two coats in method and rate per manufacturer's instruction.

### 3.02 CLEANING UP, REPAIRS AND PROTECTION

- A. Remove all surplus materials, rubble, cartons, and other debris resultant from work of this Section and haul off site. Repair damage resulting from paving operations. Leave entire work in broom-clean condition.
- B. Repair or replace broken or defective concrete, as directed by Architect.



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- C.    Protect concrete from damage until acceptance of work. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

END OF SECTION 02520

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Scope: This Section covers storm sewers, appurtenances and related items, including excavation and backfilling required to complete the work. The related work is specified under other sections of the Specifications. All existing drainage systems which are tied into by this work shall be cleaned of debris, mud and silt.
- B. Samples: Submit for approval samples of all materials to be used in the construction of storm sewers and appurtenances, when required.
- C. Coordination: Coordinate work with grading to avoid interference. Centerlines and grades for all storm sewer work shall be established and maintained by the Contractor, and all trades shall work to these lines and grades.
- D. Submittals: Contractor shall submit storm pipe and storm structure shop drawings for review and approval by Architect.

1.02 STANDARD SPECIFICATIONS

- A. All work and materials pertinent to this section of the specifications are to be in accordance with applicable sections and paragraphs of Standard Specifications for Construction of Roads and Bridges, Georgia Department of Transportation, 1983 Edition, with 1989 Supplement (hereinafter referred to as DOT Specifications), except for the deviations shown on the plans and/or as specified herein. Except where such deviations exceed the referenced specifications, the referenced specifications shall govern, shall be considered a part of the detail specifications, and shall have the same force and effect as if they had been included herein in complete language and detail.
- B. Contractor shall obtain from the Georgia Department of Transportation a copy of the latest revised issue of the "Standard Specifications" and shall keep a copy available for reference at the job site at all times while sewer construction is in progress.

1.03 ORDINANCES

- A. Comply with all applicable codes and ordinances of the City.

1.04 PROTECTION OF EXISTING FACILITIES

- A. Contractor shall maintain in operating condition all existing surface or subsurface utilities and repair or have repaired to the satisfaction of the Architect any damage done to existing utilities during the course of the work at no additional cost to the Owner.

1.05 QUALIFICATIONS OF THE CONTRACTOR

- A. The Contractor shall possess the following qualifications or employ subcontractors with the following qualifications:

1. Approved Stephens County Public Utilities Contractor.
  2. A State of Georgia Utilities Contractor License.
- B. Provide supporting documentation of the above minimum qualifications prior to any utility installation.

## PART 2 - MATERIALS

### 2.01 PIPE MATERIALS

- A. Concrete pipe shall be reinforced Class IV. All concrete pipe eighteen (18) inches and larger in diameter shall be O-Ring Concrete pipe. All applicable articles and paragraphs under Storm Sewers, Georgia DOT Specifications, shall apply.
- B. Corrugated metal pipe (CMP) shall be manufactured in accordance with AASHTO M36. The following coating is approved as follows:
1. Aluminized Steel Type 2 shall meet AASHTO M274.

All CMP Shall have a minimum of 2 re-rolled ends and be connected with a hugger type band providing positive interlock. Pipe gage shall be as follows:

<u>16 Gauge</u> Pipe Diameter	<u>14 Gauge</u> Pipe Diameter	<u>12 Gauge</u> Pipe Diameter
12"	30"	54" and larger
15"	33"	
18"	36"	
21"	39"	
24"	42"	
27"	48"	

- C. All applicable articles and paragraphs under Storm Sewers, Georgia DOT Specifications, shall apply.

### 2.02 APPURTENANCES MATERIAL

- A. Concrete shall have a minimum compressive strength of three thousand (3,000) p.s.i.
- B. Mortar for masonry work in storm sewer structures shall be 1:2 cement sand mix. Cement shall be High Early Strength American Portland cement, conforming to the latest ASTM Specifications. Sand shall be clean and sharp, free from all deleterious substances and shall contain not more than five (5) percent by volume of material passing No. 100 sieve.
- C. Brick shall be clay or shale Hard No. one (1) building brick.

- D. Castings: All castings shall be heavy duty gray iron conforming to Georgia DOT Specifications. Casting, grates, frames and other storm drainage appurtenances shall be on site prior to the construction of said structure. These shall be coordinated to maintain a snug fit between grates, lids, etc., and frame.
- E. Other materials required to completely install storm sewers in accordance with these specifications shall conform to all applicable articles and paragraphs of Georgia DOT Specifications.

#### 2.03 APPROVAL OF MANUFACTURER

- A. Materials shall be new. The type and manufacturer of all material shall be furnished to the Architect, prior to delivery of any material, for approval.

#### 2.04 CONSTRUCTION EQUIPMENT

- A. Provide and maintain in good operating condition, approved equipment capable of performing in accord with specifications, all excavation, laying of pipe, backfilling, compacting, and any other work required.

### PART 3 EXECUTION

#### 3.01 CONSTRUCTION STAKES

- A. Storm sewer materials shall be installed to line and grade established by General Contractor.
- B. Contractor shall verify all lines and grades before commencing any digging operation.

#### 3.02 EXCAVATION

- A. Trenching sheeting and bracing work shall be done as required to protect all persons, property and buildings.
- B. If rock is encountered, excavate all rock a minimum of four (4) inches below pipe at all points and of width six (6) inches outside of pipe on each side. Refer to Site Grading Section for definition of rock and basis of payment.

#### 3.03 PIPE BEDDING

- A. All bedding shall be Class "B" bedding unless shown otherwise.

#### 3.04 LAYING PIPE

- A. Storm sewer pipe to be laid in accordance with the Storm Sewer Sections, Georgia DOT Specifications.

#### 3.05 APPURTENANCES

- A. Headwall and aprons shall be constructed of concrete and in accord with details as shown on detail sheet. Refer to Site Plan for location and size.

### 3.06 BACKFILLING

- A. Backfilling of sewer ditches and appurtenances shall be in accord with Georgia DOT Specifications. Percent of compaction shall be in accord with compaction as specified in Site Grading Section.

### 3.07 COMPACTION TESTS

- A. Compaction tests shall be made as required, to determine compaction being achieved. Refer to Section 02211, Site Grading, for testing requirements. All tests required shall be made by a testing laboratory selected by the Architect, and all costs in connection therewith shall be paid by the Owner. If tests fail to meet compaction specifications, the Contractor shall then re-compact and the approved laboratory shall test again with the Contractor bearing all costs associated with failing tests.

### 3.08 TEMPORARY SURFACE DRAINAGE

- A. Leave opening at subgrade in drainage structures for surface drainage. Opening shall be grouted up after finish grading and paving are completed.

### 3.09 EXISTING DRAINAGE SYSTEMS

- A. All existing drainage pipes and structures on-site and any pipe system to be connected to, in this contract, shall be cleaned and flushed of trash, debris and silt.

### 3.10 CLEANUP

- A. Upon completion of work, all forms, equipment, protective covering, and rubbish resulting therefrom shall be removed from the premises. The interior of all sewers and other work shall be carefully cleaned of dirt, rubbish and surplus mortar and shall be left clean and smooth upon completion of contract.

END OF SECTION 02 722

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish labor, materials, and equipment required to complete cleanup of all paving, hardscaped surfaces, landscaping beds, grounds, and all other areas outlined on the drawing.
- B. Debris shall not be dumped on any part of the property or any unauthorized place. All debris, construction material, Contractor's buildings or equipment, stumps, roots, boulders or any other extraneous material deposited during construction shall be removed from the site.

END OF SECTION 02 975

**SECTION 03100****CONCRETE FORM WORK****PART 1 – GENERAL****RELATED DOCUMENTS:**

The provisions of Division 1 shall govern this Section.

**DESCRIPTION OF WORK:**

Work Included: Provide form work in accordance with provisions of this section for cast-in-place concrete shown on the drawings or required by other sections of these Specifications.

**RELATED WORK:**

Section 02200: Earthwork

Section 03200: Concrete Reinforcement

Section 03310: Concrete Work

**QUALITY ASSURANCE:**

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section. Design of form work is the Contractor's responsibility. Construct and erect concrete form work in accordance with ACI 301, ACI 347 and applicable construction safety regulations for placement of work.

**SUBMITTALS:**

Comply with pertinent provisions of Division 1.

Product Data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit manufacturer's data and installation instructions for proprietary materials including form coatings, ties and accessories and manufactured form systems if used.

**PRODUCT HANDLING:**

Comply with pertinent provisions of Division 1.

Store forms off ground in ventilated and protected manner to prevent deterioration from moisture.

**PART 2 - PRODUCTS:****WOOD FORM MATERIALS:**

Plywood: Douglas Fir; high density overlaid one side grade; sound undamaged sheets with clean true edges, 5/8" minimum thickness, 5 ply plywood especially processed to resist moisture and conforming to Plywood Class I, B-B EXT-DEPA of U.S. Product Standard PS-1-66.

Lumber: Southern Yellow Pine species; No.2 grade; with grade stamp clearly visible.

Nails, Spikes, Lag Bolts, Through Bolts, Anchorage: Sized as required, of sufficient strength and character to maintain form work in place while pouring concrete.

**FORM WORK ACCESSORIES:**

Form Ties: Snap-off metal type of adjustable length; minimum working strength of 30,000 psi when assembled; free of defects that will leave holes larger than 1 inch in concrete surface.

Form Release Agent: Colorless mineral oil which will not stain concrete.

Rustification Strips: Doron Plastics Company No. 1001, 1/4" Radius.

**CONCRETE ACCESSORIES:**

Formed Construction Joints: Minimum 20-gage thick galvanized steel; tongue and groove type profile; knockout holes at 18 inches on center to receive dowelling complete with anchorage.

**PART 3- EXECUTION****SURFACE CONDITIONS:**

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

**INSTALLATION:**

Verify lines, levels, and centers before proceeding with form work. Ensure that dimensions agree with drawings.

Variation of cross-sectional dimensions in the thickness of slabs and walls:

Minus 1/4 in.

Plus 1/2 in.



Variation in steps: Rise 1/8 in.  
In a flight of stairs: Run 1/8 in

Apply form release agent on form work in accordance with manufacturer's recommendations. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.

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 wet prior to placing concrete.

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

Set column anchor bolts in accordance with AISC tolerances. Construct form work, shoring and bracing to meet design and code requirements, so that resultant finished concrete conforms to required shapes, lines and dimensions. Arrange and assemble form work to permit dismantling and stripping, so that concrete is not damaged during its removal.

Align joints and make watertight, to prevent leakage of mortar disfigured appearance of concrete. Keep form joints to minimum.

Obtain Architect/Engineer's review and approval for use of earth forms. When using earth forms, hand-trim sides and bottoms, and remove loose dirt prior to placing concrete.

Arrange forms to allow stripping without removal of principal shores, where and when these are required to remain in place.

Obtain Architect's review before framing openings in structural members, which are not indicated on drawings.

Provide bracing to ensure stability of form work. Prop or strengthen previously constructed form work liable to be overstressed by construction loads. Contractor shall be fully responsible for adequacy of form work in its entirety. Forms will support loads that they will be required to sustain and shall maintain their dimensional and surface correctness to produce members required by the drawings.

Provide rustication strips on corners of beams and columns exposed to view.

Construct non-exposed form work to maintain following maximum tolerances: Deviation from horizontal and vertical lines: 1/4 inch in 10 feet.

Deviation of building dimensions indicated on drawings and position of columns, walls and partitions 1/4 inch.

Deviation in cross sectional dimensions of columns or beams or in thickness of slabs and walls plus or minus 1/4 inch.

Construct form work for exposed architectural concrete to maintain the following maximum dimensional tolerance:

**Vertical Variations:**

In the lines and surfaces of columns, piers, walls and in arises: In 10 ft. 1/4 in.

Provide formed openings where required for pipes, conduits, sleeves, and other work to be embedded in and passing through concrete members.

Locate and set in place items, which will be cast directly into concrete.

Coordinate work of other sections and cooperate with trades involved in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts. Do not perform work unless specifically indicated on drawings or reviewed prior to installation.

Install concrete accessories in accordance with manufacturer's recommendations straight, level and plumb. Ensure items are not disturbed during concrete placement.

Install waterstops continuous without displacing reinforcement. Heat seal joints watertight.

Place formed construction joints in floor slabs, walls and at other locations as shown on plans.

Provide control joints where necessary to prevent deterioration of concrete members due to expansion and contraction of materials.

Set top screed to required elevations. Secure to resist movement of wet concrete.

Provide temporary ports or openings in form work where required to facilitate cleanings and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close temporary ports to openings with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not be apparent in exposed concrete surfaces.

**FIELD QUALITY CONTROL:**

Construct exposed form work with skilled workmen capable of producing architecturally exposed concrete surfaces. Surfaces are intended to be left as cast. Repair minor defects that are repairable as soon as forms are removed. Conform to Portland Cement Association "Suggested Specifications for Architectural Concrete"; a copy of which shall be available on the job site at all times.

Inspect and check completed form work, shoring and bracing to ensure that work is in accordance with form work design, and that supports, fastenings, wedges, ties and parts are secure.

Inform Architect when form work is complete and has been cleaned, to allow for inspection. Obtain review prior to placing concrete. Do not patch form work.

Allow Architect to inspect each section of form work prior to reuse.

**CLEANING:**

Clean forms as erection proceeds, to remove foreign matter. Remove cuttings, shavings, and debris from within forms. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

During cold weather, remove ice and snow from within forms. Do not use deicing salts. Do not use water to clean out completed forms, unless form work and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

**FORM REMOVAL:**

Notify Landscape Architect prior to removing form work.

Do not remove forms, shores and bracing until concrete has gained sufficient strength to carry its own weight, and construction and design loads which are liable to be imposed upon it. Verify strength of concrete by compressive test results.

Remove form work progressively and in accordance with code requirements and so no shock loads or unbalanced loads are imposed on structure.

Loosen form carefully. Do not wedge pry bars, hammers, or tools against concrete surfaces.

Leave forms loosely in place, against vertical surfaces, for protection until complete removal is reviewed by Architect.

Store removed forms, for exposed architectural concrete, in manner that surfaces to be in contact with fresh concrete will not be damaged. Marked or scored forms will be rejected.

Restore structural members where required due to design requirements or construction conditions and as required to permit progressive construction. Remove load-supporting forms only when concrete has attained 75 percent of required 28-day compressive strength, provided construction is restored.

Remove forms not directly supporting weight of concrete as soon as stripping operations will not damage concrete. Wall forms, column forms, and side of beams may be removed after 24 hours, with the Architect's permission.

Under no circumstances shall wood forms be buried in full, or left in contact with earth.

**END OF SECTION 03100**

**SECTION 03200****CONCRETE REINFORCEMENT****PART 1 – GENERAL****1.1 WORK OF THIS SECTION**

- A. Work covered by this Section includes the furnishing and installation of concrete and masonry reinforcement as specified in the Contract Documents.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to Work of this Section.
- B. Cast-in-Place Concrete 03300

**1.3 SUBMITTALS**

- A. Submit under provisions of Division One.
- B. Manufacturer's certification that reinforcement meets Specification requirements, and/or certified mill test reports
- C. Shop Drawings shall show dimensions, spacing, bar and mesh schedule, bending details, stirrup and support details, and other pertinent data and in accordance with ACI 315.
- D. Submit manufacturer's printed product data, clearly marked, indicating proposed fibrous concrete reinforcement materials. Submit manufacturer's printed batching and mixing instructions.

**1.4 QUALITY ASSURANCE**

- A. Provide at least one person who will be present during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed, the referenced standards and the requirements of this work, and who shall direct all work performed under this section.
- B. Work shall comply with requirements and recommendations of the following:
  - 1. American Concrete Institute, ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
  - 2. American Concrete Institute, ACI 318, "Building Code Requirements for Reinforced Concrete Structures."
  - 3. American Concrete Institute, ACI-ASCE 530 and 530.1, "Building Code

- Requirements for Masonry Structures."
4. American Welding Society, AWS D1.4, "Structural Welding Code for Reinforcing Steel".
  5. American Welding Society AWS D12.1. "Recommended Practices for Welding Reinforcing Steel, Metal Inserts, and Connection in Reinforced Concrete Construction."
  6. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice."
  7. American Concrete Institute, ACI SP-66 "Detailing Manual."
  8. American Concrete Institute, ACI 544, "Report on Fiber Reinforced Concrete."

### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. All deliveries shall be accompanied by detailed bills of material which shall include information pertaining to bar size, bar mark, length of bends, total length of bar, weight of individual sets of bars and total weight delivered for each structure. Bundles shall be color coded.
- B. Store reinforcement off the ground, under suitable cover or in a suitable enclosure. Maintain easy access for inspection and identification of materials.
- C. Maintain reinforcement free from dirt, grease, scale, loose rust, oil, paint, other foreign matter, and all deleterious materials. Clean all reinforcement as required to meet these conditions and maintain such clean condition until such time as concrete is placed.

### **1.6 JOB CONDITIONS**

- A. All reinforcing steel within the limits of a day's pour shall be in place and firmly wired prior to commencement of concrete placing operations.
- B. Installation or wiring of steel less than six hours before commencing placement of concrete shall not be permitted, except by special written authorization of the Architect/Engineer. At least six hours of review time for each pour location shall be provided to the Architect/Engineer by the Contractor after the last reinforcement is placed and prior to placement of concrete.
- C. The reinforcing steel, in place, shall be subject to review and approval by the Architect/Engineer prior to placing of any concrete.
- D. The Contractor shall notify the Architect/Engineer a minimum of at least 24 hours prior to readiness for each reinforcing review.

## **PART 2 - PRODUCTS AND MATERIALS**

**2.1 MATERIALS**

- A. Reinforcing Bars: Deformed bars conforming to ASTM A615, Grade 60, including Supplementary Requirement S1.
- B. Wire Fabric Plain Type: ASTM A185. Flat sheets only.
- C. Wire Fabric Deformed Type: ASTM A497.
- D. Tie Wire: 16-gauge annealed type.
- E. Supporting Devices: Size and shape appropriate to conditions. Where concrete is exposed to view, chairs shall have plastic coated feet.
- F. Supporting devices for slabs on grade shall have sand plates.
- G. Dowels: plain round bars conforming to ASTM A675 Grade 80.
- H. Fiber Reinforcing (Alternate temperature reinforcing for slabs on grade)
  - 1. Fibermesh 300 (or engineer approved equal) 100 percent virgin polypropylene, fibrillated fibers containing no reprocessed olefin materials and specifically manufactured to an optimum gradation for use as concrete secondary reinforcement. Volume per cubic yard shall equal a minimum of 0.1% (1.5 pounds).
  - 2. Fibrous concrete reinforcement shall be as manufactured by Fibermesh Company, 4019 Industry Drive, Chattanooga, TN 37416, or an engineer approved equal.
  - 3. Physical Characteristics:
    - a. Specific gravity: 0.91.
    - b. Tensile strength: 50 to 110 ksi.
    - c. Fiber length: graded per manufacturer.
- I. Adhesive and grouted anchors shall be KELIBOND and KELIGROUT as manufactured by KELKEN GOLD of South Plainfield, New Jersey (201-753-0088), or an approved equal.
- J. Mechanical Rebar Splices: CADWELD T Series and B Series as manufactured by Erico Products, Inc., or an approved equal.
- K. Pipe Sleeves: Standard weight pipe conforming to ASTM A120.

**2.2 FABRICATION**

- A. Fabricate reinforcement in accordance with CRSI Manual of Standard Practice, ACI SP-66 and ACI 318.

- B. Accurately fabricate to the details and dimensions shown on the Drawings.
- C. All bars shall be bent cold and shall not be bent or straightened in a manner that will injure the material (i.e. torched).
- D. Bend all reinforcement in accordance with ACI 318.
- E. No bars that are partially embedded in concrete shall be field bent except as shown on the Drawings or as permitted by Architect/Engineer.

## **1BPART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Accurately position reinforcement and firmly support in place. The system of holding reinforcement in place shall insure that steel will not be able to move during concrete placement. If necessary, top reinforcing shall be adequately held in position to support the weight of the workmen without displacement. All reinforcement shall be rigidly wired in place with adequate spacers and tie chairs. Bar supports shall be 3'-0" on center maximum, and in accordance with ACI 315.
- B. For concrete slabs on ground or fill, support reinforcement on approved chairs. "Hooking-up" or "Walking-in" of any reinforcement including mesh, will not be permitted.
- C. Protective concrete cover shown on the Contract Documents, or required by ACI Code, shall be rigidly adhered to. Coordinate conduit and insert placement so as to avoid decreasing or increasing protective cover on reinforcement.
- D. In the event conduits, piping, inserts, sleeves, or any other items interfere with the placing of reinforcement, as indicated on the Contract Documents, consult Architect/Engineer for required changes.
- E. Protect installed reinforcing from damage and displacement before, during, and after placement of concrete. Exposed reinforcing intended for bonding with future extensions shall be protected from corrosion.
- F. At the time concrete is placed, all reinforcement shall be free from dirt, mud, ice, rust, scale, loose mill scale, oil, paint, and other coatings which may destroy or reduce bond between steel and concrete.
- G. The Contractor shall repair or replace damaged, distorted or displaced reinforcement.
- H. Fiber Reinforcing

1. Add fibrous concrete reinforcement to concrete materials at the time concrete is batched in amounts in accordance with approved submittals for each type of concrete required.
2. Mix concrete in strict accordance with fiber reinforcement manufacturer's instructions and recommendations for uniform and complete distribution.
3. Manufacturer shall provide a qualified technical representative to instruct the concrete supplier in proper batching and mixing of materials to be provided.

### **3.2 SPLICES IN REINFORCEMENT**

- A. Lap splices (wired together) and embedment lengths shall conform to:  
Concrete - ACI 318 - Chapter 12  
Masonry - ACI 530 - Chapter 8
- B. No splices of reinforcement shall be made except as shown on the plans or as specified/authorized by the Architect/Engineer.
- C. Mechanical splices shall be installed in strict accordance with manufacturer's instructions.
- D. Welding of reinforcing is not permitted unless specified or authorized by the Architect/Engineer.

**END OF SECTION 03200**



**SECTION 03300****CAST-IN-PLACE CONCRETE****PART 1 - GENERAL****1.1 WORK OF THIS SECTION**

- A. Formwork for cast-in-place concrete.
- B. Cast-in-place concrete, including concrete for the following, and other items as indicated on the Drawings.
  - 1. Foundation walls, footings, sidewalks.
  - 2. Slab on grade.
  - 3. Grout for reinforced masonry
- C. Concrete curing and finishing.
- D. Control joints, expansion, and contraction joints.

**1.2 NOT USED****1.3 RELATED WORK SPECIFIED ELSEWHERE**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to Work of this Section.
- B. Concrete Reinforcement 03200

**1.4 SUBMITTALS**

- A. Submit under provisions of Division One.
- B. Submit manufacturer's catalog cuts, technical data, and recommendations on quantities, installation, and application for the following:
  - 1. Formwork accessories.
  - 2. Concrete admixtures.
  - 3. Waterstops.
  - 4. Grout and patching materials.
  - 5. Bonding agents.
  - 6. Anchor bolts and inserts.
  - 7. Joint fillers.
  - 8. Vapor barrier.
  - 9. Curing and sealing compounds
- C. Submit proposed mix designs and test data. Identify for each mix submitted the method by which proportions have been selected.
  - 1. For mix designs based on field experience, include individual strength test results, standard

- deviation, and required average compressive strength  $f'(cr)$  calculations.
2. For mix designs based on trial mixtures, include trial mix proportions, test results, and graphical analysis and show required average compressive strength  $f'(cr)$ .
  3. Indicate quantity of each ingredient per cubic yard of concrete.
  4. Indicate type and quantity of admixtures proposed or required.
  5. Submit current test reports for aggregates showing compliance with specified quality and gradation.
- D. Submit affidavits from an independent testing agency certifying that materials furnished under this section conform to Specifications.
- E. Provide documentation from manufacturers assuring compatibility of admixtures with other ingredients. Provide documentation from manufacturers assuring compatibility of all surface applied products.
- F. Submit concrete placement schedule prior to start of any concrete placement operations. Include location of all joints indicated on drawings, plus anticipated construction joints.
- G. Submit copies of delivery tickets complying with ASTM C 94 for each load of concrete delivered to site. Include on the tickets the additional information specified in the ASTM document.
- H. Submit description of planned protective measures for cold weather or hot weather concreting.

## 1.5 QUALITY ASSURANCE

- A. The American Concrete Institute (ACI), ACI 318 "Building Code Requirements for Reinforced Concrete" and ACI 301 "Specifications for Structural Concrete for Buildings" shall be part of these Specifications as though written and attached hereto.
- B. Work shall comply with recommendations and requirements of the following, except as specifically superseded by these Specifications:
1. ACI 211 "Selecting Proportions for Concrete";
  2. ACI 226 "Silica Fume in Concrete";
  3. ACI 308 "Curing Concrete";
  4. ACI 304 "Measuring, Mixing, Transporting and Placing Concrete";
  5. ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures";
  6. ACI 302 "Floor and Slab Construction";
  7. ACI 305 "Hot Weather Concreting";
  8. ACI 306 "Cold Weather Concreting";
  9. ACI 347 "Formwork for Concrete"; and
  10. ACI 330
- C. Provide at least one person who shall be present during the execution of this portion of the Work and who shall be thoroughly trained and experienced in placing the types of concrete specified and who shall direct work performed under this Section.
- D. Concrete Quality Control
1. Procure concrete from a single Architect/Engineer-approved source. Source shall be a central commercial batching plant conforming to "Concrete Plant Standards" of the Concrete Manufacturer's Association automatic proportioning type.

2. Conform to ASTM C94, paragraphs 1 through 15 and paragraph 18.
  3. Obtain materials of each type from same source for the entire project.
  4. The Contractor shall engage testing agency to conduct tests and perform other services specified for quality control during construction.
- E. Project Conditions
1. Notify Architect/Engineer at least 48 hours in advance of intent to place concrete.
  2. Do not place concrete when the ambient temperature is below 40°F nor when the concrete temperature or ambient temperature exceeds 85°F. The Architect/Engineer may approve the placement of concrete under the above conditions, provided the recommendations of ACI 305 or ACI 306 are strictly adhered to.
  3. Do not place concrete when environmental conditions may adversely affect the placing, finishing, or curing of concrete, or its strength.
- F. The Contractor is responsible for correction of concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes. The Contractor shall correct deficient concrete as directed by the Architect/Engineer.

## PART 2 - PRODUCTS AND MATERIALS

### 2.1 FORMWORK

- A. Form Materials:
1. Concrete not exposed to view: Any standard form materials that shall produce structurally sound concrete.
  2. Exposed finish concrete: Materials selected to offer optimum smooth, stain-free final appearance and minimum number of joints. Material shall resist hydrostatic head without bowing or deflection.
  3. Plywood: PS-1, B-B high density concrete form overlay, Class I.
- B. Formwork Accessories:
1. Form coating: Form release agent that will not adversely affect concrete surfaces or prevent subsequent application of concrete coatings.
  2. Form ties: Commercially manufactured types; cone snap-ties, taper removable bolt, or other type which will leave no metal closer than 1-1/2 inches from surface of concrete when forms are removed, leaving not more than a one-inch diameter hole in concrete surface.

### 2.2 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I or Type II for normal weight concrete; Type II for lightweight concrete. Use only one brand of cement for each structure.
- B. Fly Ash: ASTM C618, Type F, Tables 1, 2, 3, and 4.
- C. Microsilica (silica fume): "Force 10,000" as manufactured by W.R. Grace & Company.
- D. Water: Fresh, clean, and potable.
- E. Aggregates:

1. Normal weight concrete: ASTM C 33.
  2. Light weight concrete: ASTM C330, expanded shale.
  3. Aggregate for normal weight concrete for interior slabs on grade shall conform to Georgia State DOT specification 603-0202 for Crushed Gravel.
  4. Fine aggregate: percentage passing No. 200 sieve shall be less than 2%.
  5. Coarse aggregate: Percentage passing No. 200 sieve shall be less than 0.7%.
    - a. Nominal size 1": ASTM Size No. 57
    - b. Nominal size 3/4": ASTM Size No. 67
    - c. Nominal size 1/2": ASTM Size No. 7
  6. Aggregates shall have been tested within the past six months from the date of the contract for the following:
    - a. Gradation: ASTM C136
    - b. Material finer than 200 sieve: ASTM C117
    - c. Organic impurities: ASTM C40
    - d. Soundness: ASTM C88
    - e. Clay lumps: ASTM C142
    - f. Light weight constituents: ASTM C123
    - g. Abrasive of coarse materials: ASTM C131
    - h. Soft particles: ASTM C235
    - i. Resistance to freeze-thaw: ASTM C66, ASTM C682.
- F. Admixtures
1. Admixtures that produce more than 0.1 percent of soluble chloride ions by weight of cement are prohibited.
  2. Admixtures shall be certified by their manufacturer for compatibility with other mix components.
- G. Air-Entraining Admixture: ASTM C 260. The following products or approved equivalents will be among those considered acceptable:
1. "Air Mix"; The Euclid Chemical Company.
  2. "Micro-Air"; Master Builders, Inc.
  3. "Daravair"; W. R. Grace & Co.
- H. Water-Reducing Admixture: ASTM C 494, Type A. The following products or approved equivalents will be among those considered acceptable:
1. WRDA with HYCOL; W.R. Grace & Co.
- I. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F or G. The following products or approved equivalents will be among those considered acceptable:
1. "WRDA 19"; W.R. Grace & Co.
  2. "Daracem-100"; W. R. Grace & Co.

## 2.3 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Nonshrink Grout: CRD-C 621, Grade B.
1. Provide nonmetallic type only.
  2. The following products or approved equivalents will be among those considered acceptable:
    - a. "Masterflow 713 or 928"; Master Builders, Inc.
    - b. "Euco N-S Grout"; The Euclid Chemical Company.

- c. "Axpandcrete"; Anti-Hydro Waterproofing Co.
  - d. "Embeco 636"; Master Builders for equipment bases.
- B. Burlap: AASHTO M 182, Class 2 jute or kenaf cloth.
- C. Moisture-Retaining Cover: ASTM C 171, and as follows:
  - 1. Fiber-reinforced waterproof paper.
  - 2. Polyethylene film.
  - 3. White burlap-polyethylene sheeting.
- D. Bonding Systems: ASTM C881; Type, grade, and class as required for project conditions. The following products or approved equivalents will be among those considered acceptable:
  - 1. "Concresive LPL", Master Builders, Inc.
  - 2. "Sikadur 32 Hi-Mod", Sika Corporation.
  - 3. "Euco #452 Epoxy System"; Euclid Chemical Company.
- E. Adhesive anchor system:
  - 1. Reinforcing bars:
    - a. "HIT C-100 System", HILTI.
    - b. "Keligrout"; KELKEN GOLD, INC., Princeton, NJ (phone 800-342-5154)
  - 2. Anchor bolts:
    - a. "HVA System", HILTI.
    - b. "Kelibond Anchors", KELKEN GOLD, INC., Princeton, NY (phone 800-342-5154)
- F. Expansion Joint Filler for pavements and sidewalks: Nonextruding bituminous type conforming to ASTM D1751.
- G. Isolation joint filler for slabs on grade: Preformed cork, 1/2" thick, conforming to ASTM D1752, Type II.
- H. Preformed Control Joint: "Screed Cap" for joints to receive sealant; "Zip Cap-Control Joint" for sawcut type joints; as manufactured by Greenstreak, Inc.
- I. Waterstop: Polyvinyl chloride (PVC), ribbed type with center bulb. Size appropriate to application. Supply prefabricated corner shapes.
- J. Waterstop: Bentonite type, "Volclay Waterstop-Rx", as manufactured by American Colloid Company.
- K. Vapor Barrier: Polyethylene sheets 10 mils thick. Top with 2-inch clean sand fill.
- L. Vapor Barrier: Moistop as manufactured by Fortifiber Corporation.
- M. Dovetail Anchor Slot: Galvanized steel, 22 gauge, felt filled.
- N. Wedge anchors: Hohman & Barnard, size as noted on Drawings.

## **2.4 SURFACE APPLIED CURING AND SEALING COMPOUNDS**

- A. Products of the following manufacturers, provided they comply with requirements of the contract documents, will be among those considered acceptable:
1. Master Builders, Inc.
  2. Anti Hydro Company, Inc.
  3. The Euclid Chemical Company.
  4. W. R. Meadows, Inc.
  5. Sonneborn Building Products Division/ChemRex, Inc.
  6. L & M Construction Chemicals, Inc.
- B. Curing and Sealing Compounds: For interior or exterior applications.
1. Products shall comply with ASTM C 309, Type 1, clear styrene acrylate type, 30% minimum solids content.
  2. Maximum allowable moisture loss of 0.3 grams per square centimeter.
  3. Do not apply to surfaces scheduled to receive other finishes, coatings or coverings unless specifically approved by the Architect/Engineer.
  4. "SuperRez-Seal"; The Euclid Chemical Company or approved equivalent.
- C. Sealing and Hardening Compounds: Generally, for use at exterior slabs and walks subject to deicing products.
1. Concrete shall receive initial water cure as described elsewhere in this section.
  2. Product shall be siloxane based, 20% minimum solids content.
  3. "Euco-Guard 200"; The Euclid Chemical Company or approved equivalent.
- D. Chemical Hardening Compounds: For interior applications where a denser and more durable surface is required.
1. Concrete shall receive initial water cure as described elsewhere in this section.
  2. Product shall be magnesium silicofluoride that reacts chemically with the free lime and calcium salts in the hardened concrete.
- E. Concrete Curing Compounds: Generally, for interior curing applications.
1. Product shall comply with ASTM C309, Type 1, Class B, wax free, resin based.
  2. Maximum allowable moisture loss of 0.3 grams per square centimeter.
  3. "KUREZ", The Euclid Chemical Company or approved equivalent. Do not apply to surfaces scheduled to receive other finishes, coatings, or coverings unless specifically approved by the Architect/Engineer.
  4. For surfaces that are scheduled to receive other finishes, coatings, or coverings, use dissipating resin-type compound, "KUREZ-DR", The Euclid Chemical Company or approved equivalent.
- F. Evaporation retarder: "Confilm"; Master Builders Company.

## 2.5 CONCRETE MIX DESIGN

- A. Do not begin concrete operations until proposed mixes have been reviewed and approved by the Architect/Engineer.
- B. Comply with recommendations of ACI 211.1 for normal weight concrete.
- C. For each type and strength of concrete, establish the required average strength  $f'(cr)$  of the design mix on the basis of either field experience or trial mixtures as specified in ACI 301, and proportion

mixes accordingly. If trial mixtures method is used, employ an independent testing agency acceptable to the Architect/Engineer for preparing and reporting proposed mix designs.

D. Admixtures:

1. Air-entraining admixture: Add at rate to achieve specified air content.
2. High-range water-reducing admixture (superplasticizer): Add as required for placement and workability.
3. Do not use admixtures not specified or approved.

E. Design mixes to meet or exceed each requirement specified. Where more than one criterion is specified, the most stringent shall apply. For example, a minimum cement content or maximum water-cement ratio might result in strengths greater than the minimum specified; likewise, a greater cement content or lower water-cement ratio may be required in order to achieve the required strength.

F. Normal Weight Concrete - Type A

1. Minimum compressive strength  $f_c$ : 3,000 psi @ 28 days.
2. Maximum water-cement ratio by weight: 0.50.
3. Minimum cement content: 475 lbs. per cubic yard.
4. Coarse aggregate size: 1".
5. Maximum slump: 3-1/2 inches  $\pm$  1 inch.
6. Air Content: 4-6%.
7. Schedule: Foundation work.

G. Normal Weight Concrete - Type B

1. Minimum compressive strength  $f_c$ : 4,000 psi @ 28 days.
2. Maximum water-cements ratio by weight: 0.45.
3. Minimum cement content: 540 lbs. per cubic yard.
4. Coarse aggregate size: 3/4"-1".
5. Maximum slump: 3-1/2 inches  $\pm$  1 inch.
6. Schedule: interior slabs on grade.

H. Normal Weight Concrete - Type C

1. Minimum compressive strength  $f_c$ : 4,000 psi @ 28 days.
2. Maximum water-cement ratio by weight: 0.45.
3. Minimum cement content: 590 lbs. per cubic yard.
4. Coarse aggregate size: 1/2".
5. Maximum slump: 3-1/2 inches  $\pm$  1 inch.
6. Air Content: 4-6%.
7. Schedule: exterior walkways or paving, structural piers & walls

I. Light Weight Concrete - Type D

1. Minimum compressive strength  $f_c$ : 4,000 psi @ 28 days.
2. Minimum cement content: 660 lbs. per cubic yard.
3. Coarse aggregate size: 3/4".
4. Maximum slump: 2-1/2 inches  $\pm$  1 inch.
5. Air Content: 4-8%.
6. Schedule: Supported floors on composite steel deck.

J. Light Weight Insulating Concrete - Type-E

1. Comply with requirements for U.L. Design number P907.
  2. Six c.f. Perlite aggregate per bag of Portland cement.
  3. One- and one-half pint 12.5 % solution neutralized vinsol resin, air-entrainment agent.
  4. Average dry density: 27 pcf.
  5. Minimum compressive strength: 150 psi.
  6. Schedule: Fire rated roof assembly.
- K. Provided that no additional expense to owner is involved, contractor may submit for Architect's/Engineer's approval requests for adjustment to approved concrete mixes when circumstances such as changed project conditions, weather, or unfavorable test results occur. Include laboratory test data substantiating specified properties with mix adjustment requests.

## **2.6 CONTROL OF MIX IN THE FIELD**

- A. A tolerance of up to 1 inch above specified slump will be permitted for 1 batch in 5 consecutive batches tested. Concrete of lower slump than that specified may be used, provided proper placing and consolidation is obtained.
- B. If slump upon arrival at the site is lower than 1 inch below the value specified, one addition of water in accordance with ASTM C 94 will be permitted to bring slump within tolerance, provided that:
1. A positive means is available to measure the amount of water added at the site.
  2. The specified (or approved) maximum water-cementitious ratio is not exceeded.
  3. Not more than 45 minutes have elapsed since batching.
- C. Total Air Content: A tolerance of plus or minus 1-1/2 percent of that specified will be allowed for field measurements.
- D. Do not use batches that exceed tolerances.

## **2.7 CONCRETE MIXING**

- A. Mix concrete materials in transit mixers, complying with requirements of ASTM C94, paragraphs 1 to 15 and 18 only.
- B. Elapsed time between initial contact of the cement with water and the completed discharge of the batch at the project site shall not exceed 90 minutes or 300 revolutions of the drum, whichever comes first. These limits shall be reduced at the direction of the Architect/Engineer.
- C. Concrete batch plant shall conform to requirements of the "Concrete Plant Standards" of the "Concrete Manufacturer's Association".

## **PART 3 – EXECUTION**

### **3.1 HOT AND COLD WEATHER CONCRETING**

- A. Do not proceed with work of this section for hot or cold weather placement without approval of the Architect/Engineer.
- B. Comply with recommendations of ACI 306 when air temperatures are expected to drop below 40 degrees F either during concrete placement operations or before concrete has cured.



1. Do not use frozen or ice-laden materials.
  2. Do not place concrete on frozen substrates.
  3. Do not add salt, calcium chloride, anti-freeze compounds.
- C. Comply with recommendations of ACI 305 when ambient temperature before, during, or after concrete placement is expected to exceed 85 degrees F.
1. Do not use retarding admixtures.
  2. Make special provisions for curing and finishing.

### **3.2 CONCRETE FORM PREPARATION**

- A. Comply with requirements of ACI 301 and ACI 347 for formwork, and as herein specified. The contractor is responsible for design, engineering, and construction of formwork, and for its timely removal.
- B. Earth forms are not permitted.
- C. Design and fabricate forms for easy removal, without impact, shock, or damage to concrete surfaces or other portions of the work.
- D. Design to support all applied loads until concrete is adequately cured, within allowable tolerances and deflection limits.
- E. Construct and brace formwork to accurately achieve end results required by contract documents, with all elements properly located and free of distortion. Provide for necessary openings, inserts, anchorages, and other features shown or otherwise required.
1. Minimize form joints and make watertight to prevent leakage of concrete.
  2. Provide chamfered edges and corners at exposed locations, unless specifically indicated otherwise on the drawings.
  3. Provide openings to accommodate work of other trades, sized and located accurately. Securely support items built into forms; provide additional bracing at openings and discontinuities in formwork.
  4. Provide temporary openings for cleaning and inspection in most inconspicuous locations at base of forms, closed with tight-fitting panels designed to minimize appearance of joints in finished concrete work.
  5. Build into concrete work all required ties, anchors, anchor bolts, sleeves, and other inserts. Accurately set items, by using templates, in their final position at the time concrete is placed.
- F. Comply with minimum tolerances established in ACI 117, unless more stringent requirements are indicated on the drawings.
- G. Provide either form materials with factory applied non-absorptive liner or field applied form coating. If field applied coating is employed, thoroughly clean and recondition formwork and reapply coating before each use. Rust on form surfaces is unacceptable.

### **3.3 JOINT CONSTRUCTION**

- A. Construction Joints: Locate and install construction joints as indicated on Drawings. If construction joints are not indicated, or if contractor opts to add additional joints, locate in manner which will least impair strength and stability of the structure.
1. Contractor shall submit location diagrams to Architect/Engineer for approval if locations are not shown on the Contract Documents.
  2. Provide keyways not less than 1-1/2 inches deep.
  3. Continue reinforcement across and perpendicular to construction joints, unless details specifically indicate otherwise.
  4. Provide adequate shear reinforcement as shown on the Drawings or as directed by the Architect/Engineer.
  5. Where a joint is to be made, the surface of the concrete shall be thoroughly cleaned. Joints shall be wetted and slushed with a coat of neat cement grout immediately before placement of new concrete. The grout shall be a neat cement and sand grout (1:3 mix) placed to a 1/2" minimum thickness. An approved bonding compound may be used in lieu of the cement grout with approval of the Architect/Engineer.
  6. Provide waterstops as indicated, and on all construction joints below grade adjacent to usable spaces. Install to form continuous, water-tight dam, with field joints fabricated in strict accordance with manufacturer's instructions.
- B. Movement Joints: Construct isolation joints in slabs poured on grade at points of contact with vertical components, such as foundation walls and column pedestals.
1. Install joint filler to full concrete depth. Recess top edge of filler 1/8 inch where joints are unsealed.
  2. Slabs on grade shall be tied to foundation walls with #3 reinforcing bars at 4'-0" unless specifically shown otherwise on the drawings.
  3. Smooth dowels greased or treated one end to prevent bond shall be installed at columns and as shown on the Drawings. Refer to "Installing Dowels", this section.
- C. Expansion Joints: Construct expansion joints where indicated. Install expansion joint filler to full depth of concrete. Recess edge of filler to depth indicated to receive joint sealant (and backer rod where necessary) specified in Division 7.
- D. Control Joints - Slabs on grade: Spacing of joints in slabs shall not exceed three times the thickness of the slab on center in feet nor 15 feet. Joints shall typically isolate columns and shall run between columns.
1. If locations of joints are not specifically shown on the Drawings, the Contractor shall submit location diagram to the Architect/Engineer for approval.
  2. Form control joints by means of saw cuts one-fourth the depth of the slab (1-1/4" minimum), performed as soon as possible after slab finishing without possibility of dislodging aggregate.
  3. Form control joints with preformed plastic accessories as directed by manufacturers.
- E. Control Joints - Walls: Construct control joints in walls within 5'-0" of corners/intersections and then at 25'-0" on center.
1. Contractor shall submit location diagram to Architect/Engineer for approval if locations are not shown on the Drawings.
  2. Construct weakened plane vertical control joints as shown on the drawings. Provide adequate shear reinforcement as directed by the Architect/Engineer.
  3. Joints above grade shall be constructed to provide for the installation of water tight joint and sealant. Joints shall be filled with appropriate backer rod and sealant.

4. Provide waterstops where indicated on the Drawings and on all joints below grade adjacent to usable spaces. Install to form continuous watertight dam, with field joints fabricated in strict accordance with manufacturer's instructions.

### **3.4 INSTALLATION OF SMOOTH DOWELS**

- A. Install dowels as noted on the Drawings.
- B. One end of dowel on one side of joint shall be non-bonded, allowed to slip.
- C. Methods:
  1. Coat the non-bonded end with grease and wrap snugly with polyethylene tape. Work shall be neat and snug without excess material.
  2. Use pre-molded dowel caps over non-bonded end.

### **3.5 INSTALLATION OF BUILT-IN ITEMS**

- A. Set anchorage devices and other items required for other work connected to or supported by cast-in-place concrete, using templates, setting drawings, and instructions from suppliers of items to be embedded.
- B. Set edge forms and intermediate screeds as necessary to achieve final elevations indicated for finished slab surfaces.
- C. Set anchor bolts furnished under Division 5, using templates and in coordination with steel shop drawings.
- D. Comply with requirements of Paragraph 6.3 of ACI 318.

### **3.6 CONCRETE PLACEMENT**

- A. Provide materials necessary to ensure adequate protection of concrete during inclement weather before beginning installation of concrete.
- B. Before beginning concrete placement, inspect formwork, reinforcing steel, and items to be embedded, verifying that all such work has been completed.
- C. Moisten wood forms immediately before placing concrete in locations where form coatings are not used.
- D. Provide runways for wheeled equipment to convey concrete. Do not support runways on reinforcing or wheel equipment directly over reinforcing.
- E. Schedule continuous placement of concrete to prevent the formation of cold joints.
- F. Provide construction joints if concrete for a particular element or component cannot be placed in a continuous operation.
- G. Deposit concrete as close as possible to its final location, to avoid segregation.

- H. Limit horizontal layers to depths which can be properly consolidated, but in no event greater than 24 inches.
- I. Consolidate concrete by means of mechanical vibrators, inserted vertically in freshly placed concrete in a systematic pattern at close intervals. Penetrate previously placed concrete to ensure that separate concrete layers are knitted together.
- J. Vibrate concrete sufficiently to achieve consistent consolidation without segregation of coarse aggregates.
- K. Do not use vibrators to move concrete laterally.
- L. Strike off and level concrete slab surfaces, using highway straight edges, darbies, or bull floats before bleed water can collect on surface. Do not work concrete further until finishing operations are commenced.

### 3.7 FINISHING FORMED SURFACES

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Remove honeycombed areas and other defective concrete down to sound concrete, cutting perpendicular to surface or slightly undercutting. Dampen patch location and area immediately surrounding it prior to applying bonding compound or patching mortar.
- C. Before bonding compound has dried, apply patching mixture matching original concrete in materials and mix except for omission of coarse aggregate, and using a blend of white and normal Portland cement as necessary to achieve color match. Consolidate thoroughly and strike off slightly higher than surrounding surface.
- D. Unexposed Form Finish: Repair tie holes and patch defective areas. Rub down or chip off fins or other raised areas exceeding 1/4-inch height.
- E. Exposed Form Finish:
  - 1. Repair and patch defective areas with fins or other projection completely removed and smoothed.
  - 2. Smooth Rubbed Finish: Apply to surfaces indicated no later than 24 hours after form removal. Wet concrete surfaces to be finished and rubbed with Carborundum brick or other abrasive until uniform color and texture are achieved. Do not apply separate grout mixture.

### 3.8 FINISHING SLABS

- A. Finishing Operations
  - 1. Do not directly apply water to slab surface or dust with cement.
  - 2. Screeding: Strikeoff to required grade and within surface tolerances indicated. Verify conformance to surface tolerances. Correct deficiencies while concrete is still plastic.
  - 3. Bull Floating: Immediately following screeding, bull float or darby before bleed water appears to eliminate ridges, fill in voids, and embed coarse aggregate. Recheck and correct surface tolerances.
  - 4. Do not perform subsequent finishing until excess moisture or bleed water has disappeared and concrete will support either foot pressure with less than 1/4 inch indentation or weight of

- power floats without damaging flatness.
  - 5. Final floating: Float to embed coarse aggregate, to eliminate ridges, to compact concrete, to consolidate mortar at surface, and to achieve uniform, sandy texture. Recheck and correct surface tolerances.
  - 6. Troweling: Trowel immediately following final floating. Apply first troweling with power trowel except in confined areas and apply subsequent trowelings with hand trowels. Wait between trowelings to allow concrete to harden. Do not overrowel. Begin final troweling when surface produces a ringing sound as trowel is moved over it. Consolidate concrete surface by final troweling operation. Completed surface shall be free of trowel marks, uniform in texture and appearance, and within surface tolerance specified.
  - 7. Grind smooth surface defects which would telegraph through final floor covering system.
- B. Finishes: Coordinate appearance and texture of required final finishes with the Architect/Engineer before application.
- 1. Broomed Float Finish: After floating and when water sheen has practically disappeared, apply uniform transverse corrugations approximately 1/16-inch-deep, without tearing surface.
  - 2. Trowel Finish: As specified above.
- C. Slab Surface Tolerances:
- 1. Achieve flat, level planes except where grades are indicated. Slope uniformly to drains.
  - 2. Floated finishes: Depressions between high spots shall not exceed 5/16 inch under a 10-foot straight edge.
  - 3. Troweled finishes: Achieve level surface plane so that depressions between high spots shall not exceed 1/8 inch under a 10-foot straight edge.
- D. Slab Finish Schedule: Apply finishes in the following typical locations and as otherwise shown on the drawings:
- 1. Broomed float finish:
    - a. Sidewalks, exterior ramps and slabs.
  - 2. Trowel finish:
    - a. Exposed interior floors.

### 3.9 CONCRETE CURING AND PROTECTION

- A. Prevent premature drying of freshly placed concrete and protect from excessively cold or hot temperatures until concrete has cured.
- B. Provide curing of concrete by one of the methods listed and as appropriate to service conditions and type of applied finish in each case. Curing period shall be not less than 7 days for standard cements and mixes.
- C. Cure formed concrete surfaces by moist curing with forms in place for full curing period or until forms are removed.
- 1. Keep wet wooden or metal forms exposed to heat of the sun.
  - 2. If forms are removed prior to completion of curing process, continue curing by one of the applicable methods specified.
- D. Water Cure: The surface of finished concrete shall be kept continuously wet for a minimum of seven days.

1. Concrete surfaces shall be kept continuously wet by sprinkling or fogging with water and by a covering material thoroughly saturated with water and kept wet by intermittent hosing. Concrete shall be protected against freezing during the curing.
  2. Covering material shall be kept continuously moist so that a film of water remains on the concrete surface throughout the curing period. Alternate cycles of wetting and drying shall not be permitted during the curing period.
  3. The use of a moisture retaining cover over burlap or a manufactured type of moisture retaining cover shall be permitted. Lap not less than 3 inches at edges and ends, and seal with waterproof tape or adhesive. Repair holes or tears during curing period with same tape or adhesive. Maintain covering in intimate contact with concrete surface. Secure to avoid displacement.
  4. Do not use plastic sheeting directly on surfaces that will be exposed to view when in service.
- C. **Compound Cure:** Curing compounds shall be applied immediately following last finishing operations.
1. Apply curing compound at rate stated by manufacturer to conform with moisture-retention requirements specified, using second, immediate application at right angles to first. Reapply if damaged by rain.
  2. Apply additional coat near substantial completion to act as sealer.
  3. Use curing compounds only in locations permitted or required. Do not apply to surfaces to receive other finishes, coatings, or coverings.
- D. **Hardening Compound:** Apply to concrete after initial water cure and seasoning of the concrete as recommended by manufacturer. Apply two or more applications as recommended by manufacturer to achieve maximum hardness.
- E. Avoid rapid drying at end of curing period.
- F. During and following curing period, protect concrete from temperature changes of adjacent air in excess of 5 degrees F per hour and 50 degrees F per 24 hours. Progressively adjust protective measures to provide uniform temperature changes over entire concrete surface.

### **3.11 JOINT FILLER**

- A. Concrete surfaces shall be fully cured (minimum 120 days).
- B. Fill full depth of crack for proper load transfer.
- C. Install in strict accordance with manufacturer's instructions.

### **3.12 REMOVAL OF FORMS AND SUPPORTS**

- A. **Non-Load-Bearing Formwork:** Provided that concrete has hardened sufficiently that it will not be damaged, forms not actually supporting weight of concrete or weight of soffit may be removed after concrete has cured at not less than 50 degrees F for 24 hours. Maintain curing and protection operations after form removal.

### **3.13 MISCELLANEOUS CONCRETE ITEMS**

- A. Fill in holes and openings left in concrete structures for passage of work by other trades after such work is in place. Place such fill-in concrete to blend with existing construction, using same mix and curing methods.
- B. Provide machine and equipment bases and foundations, as indicated on drawings. Set anchor bolts at correct elevations, complying with diagrams or templates of equipment manufacturer.
- C. Provide concrete grout for reinforced masonry where indicated on drawings and as scheduled.

### **3.14 CONCRETE REPAIRS**

- A. Patch tie holes, honeycomb, and other surface imperfections in accordance with ACI 301 and as directed by the Architect/Engineer.
- B. Defective concrete is defined as concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete or surface imperfections shall be as determined by the Architect/Engineer.
- D. Do not patch, fill, touch-up, repair, or replace any concrete except upon specific approval of methods and materials by the Architect/Engineer for each individual area.

### **3.15 REMOVAL OF EXISTING CONCRETE**

- A. Saw cut surfaces or drill holes at regular intervals sufficient to establish a fracture plane for removal by power tools.
- B. Salvage all existing reinforcing; do not cut away until specifically directed by the Architect/Engineer, or as shown on the Drawings.
- C. New work bonded to existing work:
  - 1. Clean and roughen existing surface by sandblasting, water-blasting, scabber, or other approved method.
  - 2. Embed dowels and reinforcing as detailed on the Drawings.
  - 3. Coat surface with bonding agent applied in strict accordance with manufacturer's instructions.
- D. Existing work cut away for new work.
  - 1. Saw cutting and removal shall continue to within 1/4" of the finished surface. The final 1/4" removal shall be completed by grinding to the final surface.
  - 2. Cut existing reinforcing bars 1/2" below the surface. Coat with anti-corrosion protective coating. Grout holes.
  - 3. Provide bond breaker where new concrete work is adjacent to existing work but structurally separate.

### **3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION**

- A. Composite Sampling and Making and Curing of Specimens: ASTM C 172 and ASTM C 31.
  - 1. Take samples at point of discharge.

2. For pumped concrete, perform sampling and testing at the frequencies specified herein at point of delivery to pump, and perform additional sampling and testing at the same frequency at discharge from line. Results obtained at discharge from line shall be used for acceptance of concrete.
- B. Slump: ASTM C 143. One test per batch. Modify sampling to comply with ASTM C 94.
- C. Air Content of Normal Weight Concrete: ASTM C 173 or ASTM C 231. One test per strength test performed on air-entrained concrete.
- D. Concrete Temperature: One test per strength test.
- E. Compressive Strength Tests: ASTM C 39.
  1. Mold and cure one set of 4 standard cylinders for each compressive strength test required.
  2. Obtain samples on a statistically sound, random basis, minimum frequency as follows:
    - a. 1 set per 100 cubic yards or fraction for each day's pour of each concrete class.
    - b. One set per 3500 square feet of slab or wall area or fraction thereof for each day's pour of each concrete class.
    - c. When the above testing frequency would provide fewer than 5 strength tests for a given class of concrete during the project, conduct testing from not less than 5 randomly selected batches, or from each batch if fewer than 5.
  3. Test Schedule:
    - a. Test 1 specimen per set at 7 days for information unless an earlier age is required.
    - b. Test 2 specimens per set for acceptance of strength potential; test at 28 days unless other age is specified. The test result shall be the average of the two specimens. If one specimen shows evidence of improper sampling, molding, or testing, the test result shall be the result of the remaining specimen.
    - c. Retain one specimen from each set for later testing, if required.
  4. Strength potential of as-delivered concrete will be considered acceptable if all of the following criteria are met:
    - a. No individual test result falls below specified compressive strength by more than 500 psi.
    - b. Not more than 10 percent of individual test results fall below specified compressive strength  $f'(c)$ .
    - c. Average of any 3 consecutive strength test results equals or exceeds specified compressive strength  $f'(c)$ .
  5. Testing for evaluation of field curing:
    - a. Frequency: One field set of specimens per strength acceptance test.
    - b. Mold specimens from same sample used for strength acceptance tests. Field-cure, and test at same age as for strength acceptance tests.
    - c. Evaluate construction and curing procedures and implement corrective action when strength results for field-cured specimens are less than 85 percent of test values for companion laboratory-cured specimens.
- F. Test Results: Testing agency shall report test results in writing to Architect/Engineer and contractor within 24 hours of test.
  1. Test reports shall contain the following data:
    - d. Project name, number, and other identification.
    - e. Name of concrete testing agency.
    - f. Date and time of sampling.



- g. Concrete type and class.
  - h. Location of concrete batch in the completed work.
  - i. All information required by respective ASTM test methods.
- 2. Nondestructive testing devices such as impact hammer or sonoscope may be used at Architect's/Engineer's option for assistance in determining probable concrete strength at various locations or for selecting areas to be cored, but such tests shall not be the sole basis for acceptance or rejection.
- 3. The testing agency shall make additional tests of in-place concrete as directed by the Architect/Engineer when test results indicate that specified strength and other concrete characteristics have not been attained.
  - a. Testing agency may conduct tests of cored cylinders complying with ASTM C 42, or tests as directed.
  - b. Cost of additional testing shall be borne by the Contractor when unacceptable concrete has been verified.

**END OF SECTION 03300**

**SECTION 03310****CONCRETE WORK****PART 1 – GENERAL****1.1 RELATED DOCUMENTS:**

The provisions of Division 1 shall govern this section

**1.2 DESCRIPTION OF WORK:**

Extent of concrete work is shown on the drawings, and includes, but is not necessarily limited to the following:

Wall footings, sidewalks, crosswalks, and pavement slabs

**1.3 RELATED WORK SPECIFIED ELSEWHERE:**

Section 02200:	Earthwork
Section 03200:	Concrete Reinforcement
Section 03300	Cast in place Concrete
Section 03310:	Concrete Work
Section 3523:	Concrete Sidewalks

**1.4 QUALITY ASSURANCE:**

Sample Pours: Prior to commencing overall construction of concrete surfaces, Contractor shall coordinate with Owner/Landscape Architect to construct a minimum of three sample pours of the finished concrete product. Sample shall include color additives, finish and adjacent brick border. Concrete paving may not begin until a sample pond is approved.

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

Codes and Standards: Comply with the provisions of the following codes, specifications and standards, except where more stringent requirements are shown or specified:

ASTM C 33	Concrete Aggregates
ACI 301	"Specifications for Structural Concrete for Buildings"
ASTM C 150	Portland Cement
ACI 311	"Recommended Practice for Concrete Inspection"
ASTM C 94	Ready-Mixed Concrete
ACI 318	"Building Code Requirements for Reinforced Concrete"
ACI 347	"Recommended Practice for Concrete Form Work"
ACI 304	"Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete"

Concrete Testing Service: Employ at Contractor's expense a testing laboratory acceptable to the Owner to perform material evaluation tests and to design concrete mixes.

Materials and Installed Work may require testing and re-testing, as directed by the Landscape Architect, at any time during the progress of the work. Always allow free access to material stockpiles and facilities. Tests, not specifically indicated to be done at the Owner's expense, including the re-testing of rejected materials and installed work, shall be done at the Contractor's expense.

Tests for Concrete Materials: Test aggregates by method of sampling and testing of ASTM C 33. For Portland Cement, sample the cement and determine the properties by the methods of test of ASTM C 150.

Submit written reports to the Landscape Architect for each material sampled and tested, prior to the start of the work. Provide the project identification name and number, date of report, name of contractor, name of concrete testing service, source of concrete aggregates, material manufacturer and brand name for manufactured materials, and values specified in the referenced specification for each material as acceptable for intended use.

Certificates of material properties and compliance with specified requirements may be submitted in lieu of testing. Certificates of compliance must be signed by the materials producer and the Contractor.

#### 1.5 SUBMITTALS:

Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, joint systems, curing compounds, and others as requested by the Landscape Architect.

Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test as specified.

Material Certificates provide materials certificates in lieu of materials laboratory test reports when permitted by Landscape Architect. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

Color: Submit product data and sample to Landscape Architect for approval.

### **PART 2 - PRODUCTS**

#### 2.1 CONCRETE MATERIALS:

Portland Cement: ASTM C 150, Type I, unless otherwise acceptable to Landscape Architect.

Use one brand of cement throughout project, unless otherwise acceptable to Landscape Architect.

Normal Weight Aggregates: ASTM C 33 and as herein specified. Provide aggregates from a single source for exposed concrete. Local aggregates not complying with ASTM C 33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Landscape Architect.

Fine Aggregate: Clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances. Dune sand, bank-run sand and manufactured sand are not acceptable.

Coarse Aggregate: Clean, uncoated, processed aggregate containing no clay, mud, loam or foreign matter, as follows:

Crushed stone processed from natural rock or stone.

Washed gravel, either natural or crushed. Use of pit or bankrun gravel is not permitted.

Maximum Aggregate Size: Not larger than one-fifth of the narrowest dimension between sides of forms, one-third of the depth of slabs, nor three-fourths of the minimum clear spacing between individual reinforcing bars.

Water: Potable

Air Entraining Admixture: ASTM C 260.

Water-Reducing Admixture: ASTM C 494, Type A.

Calcium Chloride: will not be permitted in concrete.

Color: Schofield (Submit samples for selection) Price Sombrero Buff.

## 2.2 PROPORTIONING AND DESIGN OF MIXES:

Prepare design mixes for each type and strength of concrete in accordance with applicable provisions of ASTM C 94. Use an independent testing facility acceptable to Landscape Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Landscape Architect.

Submit written reports to Landscape Architect for each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Landscape Architect.

Adjustment to Concrete Mixes: Mix Design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Landscape Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Landscape Architect before using in work.

## 2.3 ADMIXTURES:

Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having air content within following limits.

Pressure:

4% for maximum 2" aggregate

6% for maximum 3/4" aggregate, 7% for maximum 1/2" aggregate

Other concrete: 2% to 4% air

Use admixtures in strict compliance with manufacturer's directions.

## 2.4 CONCRETE STRENGTHS AND SLUMPS:

All concrete, except where shown or specified otherwise, shall have the following minimum compressive strengths at 28 days, and slump at time of placement:

LOCATION	STRENGTH	MAX. AGG. SIZE	SLUMP
Footings, Bases	3000 psi	1 1/2"	1 - 3"
Sidewalks & Paving	3000 psi	3/4"	1 - 4"

## 2.5 CONCRETE MIXING:

Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.

Delete references for allowing additional water to be added to batch for material with insufficient slump. Addition of water to the batch will not be permitted.

During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

When air temperature is between 85 F (30 C) and 90 F (32 C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90F (32 C), reduce mixing and delivery time to 60 minutes.

Color: Follow manufacturer instructions.

# PART 3 - EXECUTION

## 3.1 JOINTS:

Construction Joints: All construction joints shall be saw cut. No trowl or tooled joints are acceptable. Locate and install construction joints not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to Landscape Architect.

Provide keyways at least 1-1/2" deep in construction joints in walls, slabs and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.

Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints.

Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs on ground at points of contact between slabs and vertical surfaces, such as pedestals, walls, steps, and elsewhere as indicated.

### 3.2 INSTALLATION OF EMBEDDED ITEMS:

General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.

Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds. Coordinate location of pipe conduits and other required penetrations of the surface.

### 3.3 CONCRETE PLACEMENT:

Pre-placement Inspection: Before placing concrete, inspect and complete form work installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where coatings are not used.

Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.

General: Comply with ACI 304, and as herein specified.

Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of

weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable in its final location to avoid segregation.

Placing Concrete Slabs, Beams, Columns: Deposit and consolidate concrete slabs, beams and columns in a continuous operation within limits of construction joints, until the placing of a panel or section is completed.

Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps and hollows. Do not disturb slab surfaces prior to beginning finishing operations. Do not sprinkle water on the plastic surface.

Maintain reinforcing in proper position during concrete placement operations.

Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.

When air temperature has fallen to or is expected to fall below 40 F, uniformly heat water and aggregate before mixing to obtain a concrete mixture temperature of not less than 50 F, and not more than 80 F at point of placement.

Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

#### Hot Weather Placing:

When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 F (32 C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing.

Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

Do not use retarding admixtures unless otherwise accepted in mix designs.

### 3.4 FINISH OF FORMED SURFACES:

**Smooth Rubbed Finish:** Provide smooth rubbed finish to scheduled concrete surfaces, which have received smooth form finish treatment, not later than one day after form removal.

Moisten concrete surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.

**Trowel Finish:** Apply trowel finish to monolithic slab surfaces to be exposed-to view.

After floating begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8" in 10' when tested with a 10' straightedge.

### 3.5 CONCRETE CURING AND PROTECTION

**General:** Protect freshly placed concrete from premature drying and excessive hot or cold temperatures.

**Method:** Apply approved liquid type curing material to exposed concrete slabs.

### 3.6 CONCRETE SURFACE REPAIR

Patching Defective Formed Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Landscape Architect.

Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Before placing cement mortar or proprietary patching compound, thoroughly clean, dampen with water and brush-coat the area to be patched with neat cement grout, or proprietary bonding agent.

For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surfaces.

Repair defective slab surfaces by removing and replacing entire slab with fresh concrete.

### 3.7 QUALITY CONTROL TESTING DURING CONSTRUCTION:

The Owner shall employ a testing laboratory to perform tests and to submit test report.

Sampling and testing for quality control during placement of concrete shall include the following, as directed by Landscape Architect.

Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

Slump: ASTM C 143; one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.

Compression Test Specimen: ASTM C 31: One set of 6 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.

Compressive Strength Tests: ASTM C 39: One set for each 100 cy. yds. or fraction thereof of each concrete class placed in any one day or for each 5,000 sq. foot of surface area placed. 2 specimens tested at 7 days, 3 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

When frequency of testing will provide less than 3 strength tests for a given class of concrete, conduct testing from at least 3 randomly selected batches or from each batch if fewer than 3 are used.

When total quantity of a given class of concrete is less than 50 cy. yards strength test may be waived by Landscape Architect if, in his judgement, adequate evidence of satisfactory strength is provided.



When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

Test results will be reported in writing to Landscape Architect, Owner and Contractor on same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete placement, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained as directed by Landscape Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

Final Clean Up: Finished surface shall be left free and clean of tire marks, construction stains, residue, slug, grit, dirt, paint and other elements that mar the final appearance.

All excess concrete and debris shall be removed from the site. Plant beds shall be left clear of construction debris

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**END OF SECTION 03310**

**SECTION 03523**

**CONCRETE SIDEWALKS**

**PART 1 - GENERAL**

**1.01 SCOPE:**

- A. Concrete sidewalks shall be constructed of Portland cement concrete, at the locations and to the dimensions, lines, grades and cross section indicated on the Drawings or as directed by the Owner and in conformity with the provisions and requirements set out in these Specifications.
- B. Concrete sidewalks shall include all the necessary excavation, unless otherwise indicated, subgrade and subbase preparation, backfilling, final clearing up and completing all incidentals thereto, as indicated on the Drawings or as directed by the Project Landscape Architect.
- C. All materials and methods of construction for concrete sidewalks and pavement shall conform to the requirements of the Georgia Department of Transportation Standard Specifications and ASTM C 94 "Standard Specification for Ready Mixed Concrete".
- D. Gravel parking areas and driveways shall conform to aggregate base requirements outlined in this Section of the specifications.

**1.02 CONDITIONS**

- A. Weather Limitations:
  - 1. Do not conduct concrete paving operations when surface is saturated, or contains excess of moisture, which would prevent uniform distribution and required penetration.
  - 2. Construct concrete sidewalk sections only when atmospheric temperature in the shade is above 40 degrees F, when the underlying base is dry and when weather is not rainy.
  - 3. Place base course when air temperature is above 35 degrees F and rising. No base course shall be placed on a frozen, saturated, or otherwise unsuitable subgrade material.
- B. Grade Control: Establish and maintain the required lines and grades for each course during construction operations.

**1.03 INSPECTION AND TESTING:**

- A. Pavement and base testing will be performed by an independent testing laboratory paid by the Owner.
- B. The testing agency shall test in-place courses for compliance with specified density, thickness and surface smoothness requirements.

- C. Earthwork and compaction operations shall conform to the requirements of Section 02200 of these specifications.
- D. Concrete Strength: One set of acceptance and field cylinders (a total of four) from the same batch of concrete will be made for each 50 cubic yards or fraction thereof, not less than once for each 5,000 square feet of pavement in each day's placing for each class and mix design.
1. Each batch of concrete shall be tested for slump prior to placement. Slump shall be between 1/2 and 1 1/2 inches as determined by AASHTO Test Method T119.
  2. Acceptance cylinders are compression test cylinders molded in the field, stored and cured in the field for the first 24 hours after molding and thereafter in the laboratory of the testing agency until time of testing. Average breaking strength at 28 days of a set of two acceptance cylinders will comprise test.
  3. Field cylinders are compression test cylinders molded in the field, stored and cured on the work site in the same location and subject to the same exposure as job concrete of which it is a representative. Each set of two acceptance cylinders will have two matching field cylinders.
  4. One field cylinder will be broken at seven days and the remaining will be held in reserve.
- E. Allowable Variation in Thickness:
1. Aggregate Base Course:  $\pm 1/2$ -inch.
  2. Surface Course:  $\pm 1/4$ -inch.
- F. Surface Smoothness: Test finished surface of each course for smoothness using a 16-foot straightedge. Intervals of tests shall be as directed by the Landscape Architect. Surfaces will not be acceptable if exceeding the following:
1. Base Course: 1/4-inch in 16 feet.
  2. Surface Course: 1/8-inch in 10 feet.
- G. Contractor's Duties Relative to Testing:
1. Notifying laboratory of conditions requiring testing.
  2. Coordinating with laboratory for field-testing.
  3. Paying costs for additional testing performed beyond the scope of that required and for retesting where initial tests reveal non-conformance with specified requirements.
  4. Paying the cost of overlays or pavement removal and replacement which does not comply with the specified testing limits.
- H. Samples:
- Contractor shall pour at least 3 samples of colored concrete complete with finish and an adjacent integral curb for approval prior to committing to the entire concrete pour.

**PART 2 - PRODUCTS****2.01 MATERIALS:**

- A. Materials used in the construction of sidewalks, in addition to Section 03300 and other general requirements of these Specifications, shall conform, unless otherwise stipulated, to the following:
1. Portland cement shall conform to ASTM C 150, Type 1.
  2. Graded aggregate base shall be uniform throughout and conform to requirements of Section 815.01 of the Georgia Department of Transportation Specifications.
  3. Sand: Dune sand, bank-run sand and manufactured sand are not acceptable. Only builders sand shall be used.
  4. Fiber Reinforcement: Engineered polypropylene fibers designed for secondary reinforcement of concrete slabs.
  5. Color: Schofield (Samples to be selected).
  6. Premolded joint filler for expansion joints shall conform to the requirements of ASTM D 1751 or ASTM D 1752. The joint sealer for the joints in the concrete pavement shall meet the requirements of Federal Specification SS-S-164 and shall be hot poured type.
  7. Concrete Color: Concrete shall include integrated colors in the concrete mix and shall be from same supplier and same batch mixture. Finished concrete shall have a light broom finish parallel to traffic flow on all sidewalk sections.
  8. All concrete, except where shown or specified otherwise, shall have the following minimum compressive strengths at 28 days, and slump at time of placement:

Location	Strength	Maximum Aggregate Size	Slump
Footings, Bases	3000 psi	1-1/2"	1"
Walls	3000 psi	3/4"	1"
Pavement, Sidewalks	4000 psi	1-1/2"	1"

**2.02 FORM MATERIAL:**

- A. Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, natal-farmed plywood faced or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to the joint system specified. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.
- B. Lumber used in construction of wood forms shall be free of bulge or warp, of uniform width, not less than 2-inches in thickness, except that 1-inch thickness may be used on curves, and shall be sound and free from loose knots. Stakes shall be not less than 2" x 4" lumber of sufficient length that, when driven, they will hold the forms rigidly in place.

- C. Metal forms shall be of approved sections and shall have a flat surface on top. They shall present a smooth surface of the desired contour, sufficiently thick and braced to withstand the weight of the concrete without bulging or becoming displaced.

## **PART 3 - EXECUTION**

### **3.01 LABOR:**

- A. For finishing, competent and skilled finishers shall be provided.

### **3.02 EQUIPMENT:**

- A. All equipment necessary and required for the construction of concrete sidewalks must be on the Project, proven to be in first class working condition and approved by the Owner, before construction will be permitted to begin.
- B. A one bag mixer will be permitted when the total output of concrete, per 10-hour day, does not exceed 25 cubic yards.
- C. Satisfactory floats, edgers, spades and tamps shall be furnished. Tamps of not over 8-inch diameter and weighing not less than 25 pounds shall be provided for tamping subgrade. A 10-foot longitudinal float of the inverted T-type with plough handles attached for manipulation, and a rigid float not less than 18-inches longer than the width of the walk being constructed, shall be provided.

### **3.03 REMOVAL OF STRUCTURES AND OBSTRUCTIONS:**

- A. Unless otherwise indicated or stipulated, the removal of structures, obstructions, etc., will be performed in accordance with the requirements of Section 02060 of these Specifications.

### **3.04 EARTHWORK AND COMPACTION**

- A. Earthwork and compaction operations shall be performed in accordance with requirements of Section 02200 of these specifications.

### **3.05 SUBGRADE PREPARATION:**

- A. The subgrade for the sidewalk shall be formed by excavation to a depth equal to the thickness of the concrete plus the base course.
- B. All subgrade shall be of such width as to permit the proper installation and bracing of the forms.
- C. Yielding, or unsuitable material shall be removed and backfilled with satisfactory material in accordance with recommendations and approval of geo-technical consultant. Place 6-inches of graded aggregate base, as determined by the

geotechnical sub-consultant, under concrete sidewalks as necessary for subgrade stabilization, compacted thoroughly and finished to a smooth, unyielding surface and proper line, grade and cross section of the proposed construction.

- C. Additional stabilization of poor subgrade areas may be necessary to achieve compaction criteria for aggregate base. These additional subgrade stabilization measures shall be performed under the direct supervision of the geo-technical consultant. These measures may include, but are not limited to, placement of

geogrid reinforcement materials, aggregate bridge lifts, undercutting of unsuitable soils and soil cement admixtures.

### 3.06 FORMS:

- A. All forms shall be set upon the prepared subgrade, true to lines and grade, and held rigidly in place so as not to be disturbed or displaced during the placing of the concrete. The top of the form shall be set to exact grade and the height shall be equal to not less than the thickness of the proposed concrete.
- B. Design form work to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- C. Construct forms complying with ACI 347, to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades level and plumb work in finished structures. Provide for opening, offsets, sinkages, keyways, recesses, moldings, rustifications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like to prevent swelling and for easy removal.
- E. Immediately before placing the concrete, the forms shall be given a coat of light oil and where being removed and used again, the forms shall be thoroughly cleaned and oiled each time.
- F. Forms shall be removed within 24 hours after placing concrete and no pressure shall be exerted upon the concrete in removing forms.
- G. When the concrete sidewalk is to be joined to an existing sidewalk, the existing sidewalk, if not in proper condition for the junction, shall be cut to a neat line perpendicular to both the centerline and the surface, or as indicated by the Owner.

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3.07 JOINTS:

- A. Control joints shall be saw scores. No trowel joint shall be permitted or accepted.
- B. Unless otherwise indicated on the Drawings or as directed by the Landscape Architect, premoulded expansion joint filler, 3/4-inch in thickness, shall be placed at the locations and in line with expansion joints in the adjoining pavement, gutter or curb. Transverse expansion joints for concrete sidewalks shall be 3/4-inch thick. When expansion joints are not required in the adjoining pavement or gutter, and not otherwise indicated on the Drawings, a 3/4-inch premoulded expansion joint filler shall be placed at intervals of not over 30 feet apart. All premoulded expansion joint filler must be cut to full width or length of the proposed construction and shall extend to within 1/2-inch of the top or finished surface. All longitudinal expansion joints shall be placed as indicated on the Drawings or as directed by the Project Landscape Architect.
- C. All expansion joints shall be true, even and present a satisfactory appearance.
- D. All expansion joint material protruding after the concrete has been finished shall be trimmed flush as directed by the Landscape Architect.
- E. Construction Joints: Locate and install construction joints not shown on the Drawings, so as not to impair strength and appearance of the structure, as acceptable to the Landscape Architect. Review need for additional joints or scores with the Landscape Architect prior to construction.
- F. Control Joints in Slabs-on-Ground: Construct control joints in slabs-on-ground to form panels of patterns as shown. Locate expansion type joint at spacing recommended by Portland Cement Association.
- G. Control Joints in Sidewalks: Provide joints in pattern as indicated on the Drawings. Locate expansion type joints at spacing as indicated.
- H. Saw joints shall be cut no sooner than 7 hours or less than 24 hours from initial pour.

## 3.08 MANUFACTURING AND PLACING CONCRETE:

- A. Immediately before placing concrete, the depth of the proposed concrete shall be checked by means of a template cut true to the cross section of the proposed construction and any irregularities shall be corrected.
- B. Immediately before placing concrete, all subgrade shall be thoroughly sprinkled or wetted.
- C. Concrete shall not be placed upon a frozen subgrade or subbase.

- D. Construction joints will be permitted only at grooves or at expansion joints, unless otherwise approved by the Owner.
- E. The concrete shall be manufactured and placed in accordance with the requirements of Section 03300 of these Specifications.
- F. The concrete shall be placed immediately after mixing; the edges, sides, etc. shall be thoroughly spaded and the surfaces tamped sufficiently to thoroughly compact the concrete and bring the mortar to the surface. The concrete shall be deposited and compacted in a single layer.

### 3.09 FINISHING:

- A. The concrete shall be stuck-off with a transverse template resting upon the side forms and then shall be floated with a 10-foot longitudinal float working the float transversely across the concrete with a sawing motion, always maintaining it parallel to the edges of the sidewalk, or driveway, where practicable, and in such a manner that all surplus water, laitance and inert material shall be removed from the surface. This operation shall be continued until the surface of the concrete shows no variation from a 10-foot straightedge. If necessary, additional concrete shall be added to fill depressions, and the longitudinal float used again. The longitudinal float shall not be moved ahead more than one-half its length at any time.
- B. When the surface of the concrete is free from water and just before the concrete obtains its initial set, it shall be gone over and finished with a wooden float so as to produce a sandy texture. The longitudinal surface variations shall be not more than 1/4-inch under a 12-foot straightedge, nor more than 1/8-inch on a five-foot transverse section. The surface of the concrete must be finished so as to drain completely at all times.
- D. The edges of the sidewalks or driveways shall be carefully finished and rounded with an edging tool having a radius of 1/2-inch.
- E. Finish: The finished surface of the concrete shall be a light broom finish perpendicular to the flow of traffic.
- F. The edges of the concrete at contraction joints shall be rounded with an edging tool having a radius of 1/4-inch. The top and ends, where practicable, of expansion joint material shall be cleaned of all concrete and the expansion joint material shall be trimmed so as to be slightly below the surface of the concrete. All marks caused by edging shall be removed with a wetted brush or wooden float.
- G. The surface of sidewalks shall be divided into blocks by use of a grooving tool. Grooves shall be placed so as to cause contraction joints to be placed at a groove line, where practical. The grooves shall be spaced equal to the sidewalk width, but not to exceed 10' spacing between joints. The grooves shall be cut to a depth



of not less than 1-inch. The edges of the grooves shall be edged with an edging tool having a radius of 1/4-inch, and any marks caused by edging or otherwise shall be removed with a wetted brush or wooden float so as to give the surface an uniform texture and finish

### 3.10 PROTECTION AND CURING:

- A. Immediately after finishing the concrete, it shall be covered and cured in accordance with the requirements of Section 03300 of these Specifications. Curing materials shall conform to the requirements of ASTM C 309 (liquid membrane compound) or ASTM C 171. If the temperature falls to below freezing, satisfactory heating devices shall be placed under suitable covers to keep the temperature around the concrete at above 45 degrees F.
- B. Pedestrians will not be allowed upon concrete sidewalks until 12 hours after finishing concrete, and no vehicles or loads shall be permitted upon any sidewalk or driveway until the concrete has attained sufficient strength for such traffic.
- C. The Contractor shall construct such barricades and protection devices as are necessary to keep pedestrians and traffic off the sidewalks.
- H. If any sidewalk is damaged at any time previous to final acceptance of the project, it shall be repaired by removing all concrete within the limits of the grooves, and be replaced, at the Contractor's expense, with concrete of the type, kind and finish in the original construction.

### 3.11 BACKFILLING:

- A. Immediately after the concrete has set sufficiently, the spaces along the sides or edges of the sidewalk shall be refilled with suitable material, this material shall be compacted in layers of not over 4-inches each, until firm and solid.

### 3.12 CLEANING:

- A. All excess or unsuitable material shall be removed and disposed of in accordance with requirements of Section 02200 of these Specifications.
- B. Final clean up shall be performed in accordance with the requirements of these Specifications.
- C. All material becoming the property of the Owner shall be stored in a manner and at locations near or on the Project as directed by the Owner.

**END OF SECTION 03523**

**SECTION 04100****MASONRY MORTAR****Part 1 GENERAL****1.01 Scope**

The work covered by this Section consists of furnishing all labor, equipment and material required to ensure the proper proportioning of materials for masonry mortar and related work as described herein and or shown on the Drawings.

**1.02 Storage and Protection**

- A. Cementitious materials shall be delivered to the site in unbroken bags or other approved containers, plainly marked and labeled with the manufacturer's name and brand.
- B. Cementitious materials shall be handled in a manner which will prevent the inclusion of foreign materials and damage by water or dampness.

**1.03 Quality Assurance**

- A. Materials shall conform to the current editions of the following standards:
  - 1. Masonry Cement: ASTM C91.
  - 2. Aggregate for Masonry Mortar: ASTM C 144.
  - 3. Portland Cement: ASTM C 150, Type I.
  - 4. Hydrated Lime for Masonry Purposes: ASTM C 207, Type S.
  - 5. Mortar for Unit Masonry: ASTM C 270.
  - 6. Latex Portland Cement Mortar: ANSI A118.4
- B. The Contractor shall submit to the Engineer written evidence that the cement, lime and aggregate is in conformance with the material and mechanical requirements specified herein. Certified copies of independent laboratory test results or mill test results from the cement, lime and/or aggregate supplier may be considered evidence of compliance provided such tests are performed in accordance with the appropriate ASTM testing standards by experienced, competent personnel. In case of doubt as to the accuracy or adequacy of mill tests, the Engineer may require that the Contractor furnish test reports from an independent testing laboratory on samples of cement, lime and/or aggregate.
- C. In addition to these submittals, the Contractor shall submit to the Engineer test results in compliance with ASTM C 270, Section 9 for each type of mortar to be used in the work. The test report shall also include the average compressive strength of three 2-inch cubes of laboratory prepared mortar. Mortar mix ingredients and proportions shall not be changed during the course of the work without the Engineer's approval. Extreme care shall be taken to assure that the same proportion of each ingredient is used in each batch. Mortar color shall be proportioned by weight in individual containers

prior to mixing. Measuring mortar color by volume during mixing shall not be allowed.

## **Part 2 PRODUCTS**

### **2.01 Materials**

#### **A. Masonry Cement**

1. Masonry cement shall be a mixture of Portland cement and Type S hydrated lime. The mix shall not contain inert or noncementitious mineral fillers. If package mix is used, other hydraulic cements may be substituted for a part of the Portland cement. However, the Portland cement shall not be less than 30 percent of the total. Packaged mixes shall conform to the requirements of ASTM C 91.
2. The composition of the masonry cement shall be printed on each bag in terms that show compliance with these requirements.
3. If a packaged mix is not used, the Portland cement shall conform to ASTM C 150, Portland Cement, Type I and hydrated lime shall conform to ASTM C 207, Type S. The hydrated lime may be used in dry or paste form.

B. Sand: Aggregate for use in masonry mortar shall be clean, free from salt or other deleterious materials and conform to ASTM C 144, Aggregate for Masonry Mortar.

C. Water: Water for mixing shall be potable, clean and free from oil, acids, salts and other deleterious matter.

#### **D. Color**

1. Masonry cement used in load bearing and non-load bearing CMU wall construction shall be grey.
2. Masonry cement used in the granite stone shall be colored. Colors shall be approved by the Engineer in conjunction with the selection of the granite stone and CMU veneers.

## **Part 3 EXECUTION**

### **3.01 Installation**

#### **A. Mixing and Placing**

1. All mortar materials shall be accurately measured by volume and thoroughly mixed until they are evenly distributed throughout the batch. Mix mortar as follows: first, add approximately 3/4 of required water, 1/2 the sand and all the cement and lime; mix and add remainder of sand. Mix briefly; then add remainder of water in small quantities until workability of batch is satisfactory to masons. Mortar color when used shall be added to the 3/4 of required water prior to adding sand. After all materials have been added, mix for a minimum of five minutes. Completely empty drum before recharging for next batch.

2. All mortar shall be mixed in a powered, batch-type mechanical mixer. This requirement will not be waived except for minor jobs and only upon the approval of the Engineer.
  3. Mortars mixed for more than one hour shall not be used. A mortar which shows a tendency to become dry before this time shall have water added to it and shall be re-mixed. The use of a continuous mixer or retempered mortar shall not be permitted.
  4. Mortar for pointing shall have integral waterproofing added in accordance with the manufacturer's instructions.
  5. Mortar for exterior brick paving shall have a bond coat between the concrete slab and mortar setting bed. Bond coats consist of Portland cement mixed to a creamy consistency with latex additive. The bond coat is used to create improved bond between the concrete slab and the mortar setting bed. It is installed as the setting bed and pavers are laid and should not exceed 1/16 in. (2mm).
- B. Mix Proportions: All mortar shall conform to the requirements of ASTM C 270. Mix proportions by volume. Allowable error is two percent.

1. Mortar Mixes

Types	Mix by Parts Description	A	B
M	Portland Cement	1	1
M	Masonry Cement	0	1
M	Hydrate Lime	1/4	0
M	Damp Loose Aggregate	3 - 3-1/2	4-1/2 - 6
N	Portland Cement	1	0
N	Masonry Cement	0	1
N	Hydrate Lime	1	0
N	Damp Loose Aggregate	4-1/2 - 6	2-1/4 - 3
S	Portland Cement	1	1/2
S	Masonry Cement	0	1
S	Hydrate Lime	1/2	0
S	Damp Loose Aggregate	4-1/2	4-1/2

2. Mortar Uses

- a. Use Type M for all load bearing masonry and in foundation walls where masonry materials occur.
- b. Use Type N for all interior non-load bearing masonry.
- c. Use Type S for all face stone work, backup and parging.
- d. Type M may be used in lieu of Type N or S.
- e. Type S may be used in lieu of Type N.
- f. Use Type M for exterior mortared masonry unit paving
- g. Use Latex-Portland Cement Mortar in applications such as heavy vehicular traffic pavements or pavements where proper drainage is not possible.

**END OF SECTION 04100**

## **PART 1 - GENERAL**

### **RELATED DOCUMENTS**

Section 04100 - Masonry Mortar

Section 04400 – Stone Masonry

### **DESCRIPTION OF WORK:**

Extent of each type of masonry work is indicated on drawings. In general, the work includes:

Stone masonry, mortar, and accessories.

### **QUALITY ASSURANCES:**

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

Sub-Contractor or Mason:

Shall have a minimum of three years experience in the installation of flat work paving and walls respectively.

Construction Tolerances:

Variation from Plumb:

For vertical lines - walls and arises do not exceed 1/8" in 3'.

Variation from Level:

For top of walls and masonry courses do not exceed 1/8" in 10'. Tops of all borders, steps and paving shall be flush to adjacent bricks unless specified.

Variation in Cross-Sectional Dimensions:

For thickness of walls do not exceed minus 1/4" or plus 1/2".

### **SUBMITTALS:**

Product Data:

Submit manufacturer's specifications and other data for each type of masonry unit, accessory, and other manufactured products, including certifications that each type complies with specified requirements. Include instructions for handling, storage, installations and protections. Submit samples of each color and shape for approval prior to purchase. Color range sample for variations of grey granite shall be submitted for approval.

### **SAMPLE PANELS:**

No work shall proceed until sample panels are completed and approved by the Landscape Architect.

Construct sample flat work panel 4'x4' using specified stone and mortar, bond and joint tooling required for final work, indicating the proposed range of color, texture and workmanship to be expected in the completed work. Obtain Landscape Architect's acceptance of visual qualities of the sample before start of masonry work. Protect panels during construction as a standard for judging completed masonry work. Use sample panels to test proposed cleaning procedures.

Construct sample panels to show finished condition of each pattern of stone and brick paving and walk including all borders and edges. Sample may be built in place and become part of finish work upon approval by Landscape Architect. Use sample panels to test jointing, pointing and cleaning procedures.

Samples shall be maintained throughout the project as a standard. Samples shall be removed as part of final cleanup.

Borders shall be installed with clean joints, even and uniformly spaced. Corners shall be neatly butted or mitered.

#### JOB CONDITIONS:

##### Protection of Work:

During construction cover work with heavy waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress. Extend cover a minimum of 12" beyond work completed.

Do not apply uniform loading for a least 12 hours after building masonry walls, columns or paving.

Do not apply concentrated loads for at least 3 days after building masonry walls, columns or paving.

##### Staining:

Prevent grout or mortar from staining the face of masonry to be left exposed. Remove immediately grout or mortar in contact with such masonry.

#### COLD WEATHER PROTECTION:

Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.

Remove all masonry determined to be frozen or damaged by freezing conditions.

Perform the following construction procedures while the work is progressing:

When air temperature is from 40 degrees F to 35 degrees F, heat sand or mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F.

Do not proceed with masonry work until temperatures are 35 degrees F and rising.

Perform the following protections for completed masonry not being worked on:

When the mean daily air temperature is from 40 degrees F and below, protect masonry from rain or snow for at least 24 hours by covering with weather resistive membrane.

## **PART 2 - PRODUCTS**

### **MASONRY UNITS – GENERAL:**

The Contractor shall be responsible for estimating and furnishing sufficient quantities required to complete the project. The quantities estimated shall be stated in the bid proposal for the purpose of establishing credits for differences in cost of brick selected and allowance stated above.

#### **Concrete Masonry Units (Concrete Block):**

Size: Manufacturer's standard units with nominal dimensions of 16" long, 8" wide and 8" high (15 5/8" x 7 5/8" x 7 5/8" actual) and other sizes indicated.

Hollow Load-Bearing Concrete Masonry Units: ASTM C 90, Grade N. Normal weight units using concrete aggregates complying with ASTM C 33 producing dry net unit weight of not less than 125 pounds per cubic foot.

Provide manufacturer's standard color and texture, unless otherwise indicated.

#### **Mortar Materials:**

Masonry Cement for Exposed Work: Brixment-in-color. Color shall be as required to closely match brick.

Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color.

Masonry Cement: ASTM C 91, non-staining, except with 12% maximum air content by volume.

Hydrated Lime: ASTM C 207, Type S.

Aggregates: ASTM C 144.

#### **Masonry Accessories:**



Continuous Wire Reinforcing and Ties for Masonry:

Provide welded wire units prefabricated in straight lengths of not less than 10' with matching corner units. Fabricate from cold-drawn steel wire complying with ASTM A 82, with deformed continuous side rods and plain cross-rods, and a unit width of 1-1/2" less than thickness of wall.

Provide units fabricated as follows:

Truss type fabricated with single pair of 9 ga. Side rods and 9 ga. continuous diagonal cross-rods spaced not more than 16" o.c. Hot dip galvanized after fabrication with 1.5 oz. Zinc coating, ASTM A 153, Class B2.

Wall Ties:

Provide Z-Bar type, 3/16" diameter hot dipped galvanized steel wire, 2" legs x 10" length, as Dur-O-Wall D/A 500 for reinforced brick walls.

Provide Z-Type, 3/16" diameter mill galvanized steel wire, as Dur-O-Wal D/A 512, No.7 for brick veneered walls.

Anchors and Ties:

Provide straps, bars, bolts and rods as indicated.

Reinforcing Bars: Deformed steel ASTM A 615, Grade 60 of the sizes shown.

Mortar Mix:

Mortar shall consist of (by volume) one-part Portland cement, two parts masonry cement and six parts sand, with sufficient water for workable plastic mix.

Portland Cement Grout:

Grout shall consist of (by volume) one-part Portland cement, two parts sand, and two parts coarse aggregate, maximum size 3/8". Add sufficient water to provide a fluid mix, with 8 1/2" to 10" slump.

Manufacturer:

Obtain masonry units from one manufacturer of uniform texture and color for each kind required, for each continuous area and visually related areas.

**PART 3 - EXECUTION**

Layout work carefully to avoid unnecessary cutting of brick. Contractor is expected to adjust layouts to fit common brickwork dimensions.

**STAKING:**

See paragraph 1.8 of Supplementary Conditions for process.

**SAMPLE:**

Contractor shall install and clean to finished condition enough work to include each element pattern, bond and jointing of the masonry to serve as a sample. No work shall commence until the sample is approved by the Landscape Architect. Approved sample shall be maintained in finished condition through the construction process.

**INSTALLATION, GENERAL:****Thickness:**

Build masonry construction to the full thickness shown, except single-width walls to the actual thickness of the masonry units, using units of nominal thickness shown or specified.

Cut masonry units with motor-driven saw designed to cut masonry with clean sharp, unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible.

**Frozen Materials and Work:**

Do not use frozen materials or materials mixed or coated with ice or frost. For masonry, which is specified to be wetted, comply with the BIA recommendations. Do not build on frozen work. Remove and replace masonry work damaged by frost or freezing.

**Pattern Bond:**

Lay concealed masonry with all units in a wythe bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners, unless otherwise shown. Do not use units with less than 4" horizontal face dimensions at corners

If drawings do not clearly indicate the pattern or detail of the bond, the contractor shall immediately contact the Landscape Architect for clarification.

**Stopping and Resuming Work:**

Rack back 1/2 masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if specified to be wetted) and remove loose masonry units and mortar prior to laying fresh masonry.

Wherever contractor determines there is not adequate information to construct an element, bond, or pattern of the design, the contractor shall not proceed with the work until the Landscape Architect is notified.

**Batch Control, Mortar:**

Measure and batch materials by volume such that the required proportions for mortar can be accurately controlled and maintained. Measurement of sand exclusively by shovel will not be permitted.

Mix mortar ingredients for a minimum of 5 minutes in a mechanical batch mixer. Use water clean and free of deleterious materials which would impair the work. Do not use mortar which has begun to set, or if more than 2-1/2 hours has elapsed since initial mixing. Re-temper mortar during 2/1/2-hour period as required to restore workability.

Mixer shall not be located in proximity of plants or plant beds.

#### Bedding and Jointing:

Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells; also bed webs in mortar in starting course on footings, and where adjacent to cells or cavities to be reinforced or to be filled with concrete or grout.

All joints butting against concrete or other masonry installations shall be a silicon flexible joint material or expansion material.

#### Joints:

Maintain joint widths shown, except for minor variations required to maintain bond alignment.

If not otherwise indicated, lay walls with 3/8" minimum and 1/2" maximum joints. Lay all flat work with 1/2" minimum and 5/8" maximum joints.

#### Joint Treatment:

For concealed work, struck flush.

Wall caps and exposed joints of all stonework shall have joints tooled slightly concave.

Any joints falling out shall be replaced by contractor for up to one year after final acceptance.

#### Horizontal Joint Reinforcing

Provide continuous horizontal joint reinforcing as shown and specified. Fully embed longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls and 1/2" at other locations. Lap reinforcement a minimum of 6" at ends of units. Provide continuity at corners by using prefabricated "L" sections.

Space continuous horizontal reinforcing as shown on drawings.

#### REINFORCING BARS:

Install reinforcing bars as specified in cells of concrete masonry units where shown on drawing. Fill cells solid with mortar around reinforcing.

#### REPAIR, POINTING AND CLEANING:

Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

**Pointing:**

During the tooling of joints, enlarge any voids or holes, except weepholes, and completely fill with mortar. Point-up all joints at corners, openings and adjacent work to provide a neat, uniform appearance.

Clean exposed stone masonry surfaces by the bucket and brush hand cleaning method or by high pressure water method.

Use commercial cleaning agents only with approval of owner and landscape architect and in accordance with manufacturer's instructions.

Do not allow chemical cleaning agents to damage adjacent plant materials, contaminate soil in plant beds, or damage surface of other materials.

Workmen shall not track across lawns when using chemical cleaning agents.

Slug, dust and debris left from the operation of mixer and brick saw shall be removed from the site and cleaned from all finished surfaces.

**FINAL CLEAN UP:**

All finished masonry shall be left in cleaned condition free of mortar, stains, slug or other debris.

All adjacent plant beds shall be left clear of mortar, refuse, bricks, and other contaminants. Any soil contaminated by masonry work shall be removed and replaced with suitable topsoil. Any plant material damaged by masonry or cleanup work shall be replaced by the contractor.

**END OF SECTION 04200**

## PART 1 - GENERAL

### 1.1 SCOPE OF WORK

- A. The work included in this Contract is shown on the drawings and described in these specifications. It consists of furnishing all labor, material, services, supervision and connection of all systems shown and/or specified including the requirements of:

DIVISION	0	-	BIDDING AND
			CONTRACT REQUIREMENTS
DIVISION	1	-	GENERAL REQUIREMENT
DIVISION	16	-	ELECTRICAL WORK

- B. Contractor is responsible to review and understand all drawings and all work of all trades to ensure a complete and thorough project.
- C. Provide all labor, tools, materials, equipment, coordination, and plans necessary for installation and proper operation of the electrical systems.
- D. Contract drawings and specifications are complementary and must be so used to ascertain all requirements of the work.

### 1.2 DEFINITIONS

- A. Provide, furnish, and furnish and install shall have the same meaning. That is, the Contractor shall purchase, transport to the site and install all required components of the work unless specifically stated otherwise in the contract documents.
- B. Wiring pertains to raceway, fittings, conductors, terminations, hangers, supports, etc. as required to form a complete system.

### 1.3 DRAWINGS AND SPECIFICATIONS

- A. The plans are diagrammatic and indicate only the sizes and general arrangement of conduit and equipment; exact locations of all elements shall be determined as work progresses, in cooperation with the work of other trades. It is not intended to show every item of work or minor piece of equipment, but every item shall be furnished and installed without additional remuneration as necessary to complete the system in accordance with the best practice of the trade.

## 1.4 APPLICABLE STANDARDS

- A. All equipment shall bear the UL label.
- B. The latest edition of the following minimum standards shall apply wherever applicable:

ASA	American Standards Association
ASTM	American Society for Testing Materials
ETL	Electrical Testing Laboratories, Inc.
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable for Engineers Association
OSHA	Occupational Safety and Health Act
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
UL	Underwriters Laboratories, Inc.
Power company standards and regulations.	
Local and state codes.	

- C. In the event there are conflicts between specifications and standards, standards shall govern unless specifications are in excess of standards.

## 1.5 PERMITS AND INSPECTIONS

- A. Permits: The Contractor shall apply for and pay the cost for any local permits necessary for the work of this contract.
- B. Inspections: The Contractor shall be responsible for obtaining inspection of and the certificate by the approved inspection agency for the entire electrical system.
- C. The undertaking of periodic inspections by the Owner or Engineer shall not be construed as supervision of actual construction. The Owner or Engineer is not responsible for providing a safe place of work for the Contractor, Contractor's employees, suppliers or subcontractors for access, visits, use, work, travel or occupancy by any person.

## 1.6 CODES AND REGULATIONS

- A. Comply with all applicable rules and regulations of the municipal laws and ordinances and latest revisions thereof. All work shall be done in full conformity with the requirements of all authorities having jurisdiction. Modifications required by the above authorities will be made without additional charges to the Owner. Where alterations to and/or deviations from the Contract Documents are required by the authorities, report the requirements to the Engineer and secure approval before work is started.
- B. Furnish and file with the proper authorities, all drawings required by them in connection with the work. Obtain all permits, licenses, and inspections and pay all legal and proper fees and charges in this connection.
- C. Should any work shown or specified be of lighter or smaller material than Code requires, same shall be executed in strict accordance with the regulations.
- D. Heavier or larger size material than Code requires shall be furnished and installed, if required by the Plans and Specifications.
- E. The Contractor shall have the electrical work inspected from time to time by authorized inspectors and shall pay all expense incurred by same. At the completion of the work, the Contractor shall furnish a Certificate of Approval, in triplicate, indicating full approval of the work furnished and installed in this Contract from the local authority having jurisdiction.
- F. Equipment and components parts thereof shall bear manufacturer's name-plate, giving manufacturer's name, size, type and model number or serial number, electrical characteristic to facilitate maintenance and replacements. Name-plates of distributors or contractors are not acceptable.

- G. Engineer will have privilege of stopping any work or use of any material that in his opinion is not being properly installed and each Contractor shall remove all materials delivered, or work erected, which does not comply with Contract Drawings and Specifications, and replace with proper materials, or correct such work as directed by the Engineer, at no additional cost to Owner.
- H. If equipment or materials are installed before proper approvals have been obtained, each Contractor shall be liable for their removal and replacement including work of other trades affected by such work, at no additional cost to Owner, if such items do not meet intent of the Drawings and Specifications.

#### 1.7 RECORD DRAWINGS

- A. The Electrical Contractor shall keep an accurate location record of all underground and concealed piping, and of all changes from the original design. He is required to furnish this information to the Engineer prior to his application for final payment.
  - 1. Submit prior to final acceptance inspection, one complete marked-up set of reproducible engineering design drawings.
    - a. Fully illustrate all revisions made by all crafts in course of work.
    - b. Include all field changes, adjustments, variances, substitutions and deletions, including all Change Orders.
    - c. Exact location of raceways, equipment and devices.
    - d. Exact size and location of underground raceways, grounding conductors and duct banks.
  - 2. These drawings shall be for record purposes for Owner's use and are not considered shop drawings.
- B. At completion of the project, all changes and deviations from the Contract Documents shall be recorded by the Contractor.
- C. Four (4) corrected sets of all operating and maintenance instructions and complete parts lists bound in hard covers shall be furnished to the Owner.

#### 1.8 CLEANING CONDUIT, EQUIPMENT

- A. Conduit, equipment: thoroughly cleaned of dirt, cuttings, other foreign substances. Should any conduit, other part of systems be stopped by any foreign matter, disconnect, clean wherever necessary for purpose of locating, removing obstructions. Repair work damaged in course of removing obstructions.



### 1.9 BALANCED LOAD

- A. It is intended that design and features of the work as indicated will provide balanced load on the feeders and main service. Contractor shall provide material and installation to provide this balance load insofar as possible.
- B. Contractor shall take current and voltage measurements at all panels of at least 1/2 hour. Reconnections of loads shall be made when deemed necessary by the Engineers.

### 1.10 JOB CONDITIONS

- A. Examine site related work and surfaces before starting work of any Section. Failure to do so shall in no way relieve the Contractor of the responsibility to properly install the new work.
  - 1. Report to the Engineer, in writing, conditions, which will prevent proper provision of this work ten (10) days prior to bid date, in time for an addendum to be issued .
  - 2. Beginning work of any Section without reporting unsuitable conditions to the Engineer constitutes acceptance of conditions by the Contractor.
  - 3. Perform any required removal, repair or replacement of this work caused by unsuitable conditions at no additional cost to Owner.
  - 4. The Contractor is responsible for performing routine maintenance and cleaning of any existing equipment where he is making connections to new work and to the building where his work adds debris.

### 1.11 SPECIAL TOOLS AND LOOSE ITEMS

- A. Furnish to Owner at completion of work:
  - 1. One set of any special tools required to operate, adjust, dismantle or repair equipment furnished under any section of this Division.
  - 2. "Special Tools": Those not normally found in possession of mechanics or maintenance personnel.
  - 3. Keys
  - 4. Redundant components and spare parts.
- B. Deliver items to Owner and obtain receipt prior to approval of final payment.

### 1.12 REVIEW OF CONSTRUCTION

- A. Work may be reviewed at any time by representative of the Engineer.
- B. Advise Architect and Engineer that work is ready for review at following times:
  - 1. Prior to backfilling buried work.

- 2. When all requirements of contract have been completed.
- C. Neither backfill nor conceal work without Engineer's consent.

#### 1.13 SHOP DRAWING SUBMITTALS

- A. Submit required shop drawings, samples and product information in accordance with Division 1, requirements and as required in the various sections of these specifications.
- B. Submittals shall show evidence of checking by the Contractor for accuracy. Product information (catalog sheets) shall indicate complete catalog number, color, accessories, etc., as well as, name of manufacturer and local distributor or manufacturer's representative.
- C. Submit for review detailed coordination drawings 3/8" or larger scale plans for all major electrical equipment and any areas of conflicts by drafting location of equipment, lighting fixtures, and conduits larger than 1-1/2" trade size. Contractor shall refer to Division 1 for preparing coordination drawings.
- D. Incomplete submittals will be rejected.
- E. Additionally, the Contractor will submit data on the following:
  - 1. All electrical equipment including all panelboards and switching devices (disconnects, switches, occupancy sensors, etc.).
  - 2. Any proposed variation in specified wiring plans and circuitry.
  - 3. All special items and panels, made or constructed specifically for this project, including wiring diagrams, component layout and component data or materials list.
  - 4. All settings of installed equipment, such as overcurrent protection, overload settings, temperature settings, time settings, etc. This includes equipment provided by other contractors or subcontractors and connected and tested by this Contractor.
- F. All submittals of NON SPECIFIED equipment and components will be reviewed. It is the submitting Contractor's responsibility to prove compliance and not the Architect/Engineer to prove non-compliance. The submitting Contractor will be charged the prevailing wage of the reviewing Engineer for all submittals requiring over one (1) hour to review that were not originally specified.

#### 1.14 OPERATING INSTRUCTIONS

- A. It shall be the Contractor's responsibility to insure that the Owner's representative is given adequate instruction on the operation of all equipment prior to final payment.

#### 1.15 TEMPORARY POWER

- A. The Contractor shall provide all temporary power to all trades for all construction locations of this contract. This will include but not be limited to temporary lighting and power outlets.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. All materials and equipment shall be new and as specified or of equal or better quality.
- B. Basic hardware and miscellaneous items shall meet existing trade standards of quality and shall carry UL or FM listings where applicable.
- C. All equipment supplied shall be the standard equipment of the manufacturer.
- D. Multiple items such as panelboards, wiring devices, switches, breakers, raceways, etc., shall be from the same manufacturer.
- E. Drawings and specifications are based on specific manufacturer's equipment. Therefore, the Contractor shall assume all responsibility, cost and coordination involved in making any necessary revisions to apply another manufacturer's equipment, even though it may be approved as an "equal" item by the Engineer.

### PART 3 - EXECUTION

#### 3.1 COORDINATION OF WORK

- A. All work shall be executed in accordance with recognized standards of workmanship. All work shall be installed in a neat and orderly manner.
- B. The Contractor shall exchange information with other Contractors and the Owner in order to insure orderly progress of the work.
- C. The Contractor must contact the Owner's representative and schedule all work ten (10) days prior to start.

- D. The Contractor shall check for possible interference before installing any items. If any work is installed, and later develops interference with other features of the design, the Contractor will be responsible to make such changes to eliminate the interference.

### 3.2 UTILITY COMPANY INTERFACE

- A. The Contractor shall coordinate his work with the local utility company and shall make arrangements for all connections and service entrance changes.
- B. The Contractor shall coordinate all shutdowns with the local utility.

END OF SECTION 16000

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Raceways and Boxes.
  - 2. Wire and connectors.
  - 3. Supporting devices for electrical components.
  - 4. Electrical identification.
  - 5. Cutting and patching for electrical construction.
  - 6. Touchup painting.

### 1.3 DEFINITIONS

- A. IMC: Intermediate metal conduit.
- B. LFMC: Liquidtight flexible metal conduit.
- C. RNC: Rigid nonmetallic conduit.

### 1.4 SUBMITTALS

- A. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

### 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with the latest edition of NFPA 70.

## 1.6 COORDINATION

- A. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.
- B. Coordinate electrical service connections to components furnished by utility companies.
  - 1. Coordinate installation and connection of exterior underground and overhead utilities and services, including provision for electricity-metering components.
  - 2. Comply with requirements of authorities having jurisdiction and of utility company providing electrical power and other services.
- C. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces.
- D. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

## PART 2 - PRODUCTS

### 2.1 RACEWAY AND BOXES

- A. IMC: ANSI C80.6, zinc-coated steel, with threaded fittings.
- B. LFMC: Zinc-coated steel with sunlight-resistant and mineral-oil-resistant plastic jacket.
- C. RNC: NEMA TC 2, Schedule 40 PVC, with NEMA TC3 fittings.
- D. Raceway Fittings: Specifically designed for the raceway type with which used.
- E. Sheet Metal Boxes: NEMA OS 1.
- F. Cast-Metal Boxes: NEMA FB 1, Type FD, cast box with gasketed cover.
- G. Nonmetallic Boxes: NEMA OS 2.

### 2.2 CONDUCTORS

- A. Conductors, No. 10 AWG and Smaller: Solid or stranded copper.
- B. Conductors, Larger Than No. 10 AWG: Stranded copper.
- C. Insulation: Thermoplastic, rated at 75 deg C minimum.

- D. Wire Connectors and Splices: Units of size, ampacity rating, material, type, and class suitable for service indicated.

## 2.3 SUPPORTING DEVICES

- A. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.
- B. Slotted-Steel Channel Supports:
  - 1. Channel Thickness: Selected to suit structural loading.
  - 2. Fittings and Accessories: Products of the same manufacturer as channel supports.
- C. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
- D. Expansion Anchors: Carbon-steel wedge or sleeve type.
- E. Toggle Bolts: All-steel springhead type.
- F. Powder-Driven Threaded Studs: Heat-treated steel.

## 2.4 ELECTRICAL IDENTIFICATION

- A. Identification Devices: A single type of identification product for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.
- B. Raceway and Cable Labels: Comply with ANSI A13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway and cable size.
  - 1. Type: Preprinted, flexible, self-adhesive, vinyl. Legend is overlaminated with a clear, weather- and chemical-resistant coating.
  - 2. Color: Black letters on orange background.
  - 3. Legend: Indicates voltage.
- C. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than **1 inch wide by 3 mils thick (25 mm wide by 0.08 mm thick)**.
- D. Underground Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape with the following features:
  - 1. Not less than **6 inches wide by 4 mils thick (150 mm wide by 0.102 mm thick)**.
  - 2. Compounded for permanent direct-burial service.
  - 3. Embedded continuous metallic strip or core.
  - 4. Printed legend that indicates type of underground line.
- E. Tape Markers for Wire: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.

- F. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
- G. Exterior Warning and Caution Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch (1-mm), galvanized-steel backing, with colors, legend, and size appropriate to the application. 1/4-inch (6-mm) grommets in corners for mounting.
- H. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

## 2.5 TOUCHUP PAINT

- A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.
- B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

## PART 3 - EXECUTION

### 3.1 ELECTRICAL EQUIPMENT INSTALLATION

- A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide the maximum possible headroom.
- B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.
- D. Right of Way: Give to raceways and piping systems installed at a required slope.

### 3.2 RACEWAY AND BOX APPLICATION

- A. Use the following raceways for outdoor installations:
  - 1. Exposed: IMC.
  - 2. Concealed: IMC.
  - 3. Underground, Single Run: RNC.
  - 4. Underground, Grouped: RNC.
  - 5. Connection to Vibrating Equipment: LFMC.
  - 6. Boxes and Enclosures: NEMA 250, Type 3R or Type 4.



### 3.3 RACEWAY AND CABLE INSTALLATION

- A. Conceal raceways and cables, unless otherwise indicated.
- B. Use temporary raceway caps to prevent foreign matter from entering.
- C. Make conduit bends and offsets so ID is not reduced. Keep legs of bends in the same plane and straight legs of offsets parallel, unless otherwise indicated.
- D. Use raceway and cable fittings compatible with raceways and cables and suitable for use and location.
- E. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of the pull wire.
- F. Connect equipment subject to vibration, noise transmission, or movement with a maximum of 72-inch (1830-mm) flexible conduit. Install LFMC in wet or damp locations. Install separate ground conductor across flexible connections.

### 3.4 WIRING METHODS FOR POWER, LIGHTING, AND CONTROL CIRCUITS

- A. Feeders: Type THHN/THWN insulated conductors in raceway.
- B. Underground Feeders and Branch Circuits: Type THWN or single-wire, Type UF insulated conductors in raceway.

### 3.5 WIRING INSTALLATION

- A. Install splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- B. Install wiring at outlets with at least 12 inches (300 mm) of slack conductor at each outlet.
- C. Connect outlet and component connections to wiring systems and to ground. Tighten electrical connectors and terminals, according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

### 3.6 ELECTRICAL SUPPORTING DEVICE APPLICATION

- A. Damp Locations and Outdoors: Hot-dip galvanized materials.
- B. Selection of Supports: Comply with manufacturer's written instructions.
- C. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of **200-lb (90-kg)** design load.

### 3.7 SUPPORT INSTALLATION

- A. Install support devices to securely and permanently fasten and support electrical components.
- B. Install metal channel racks for mounting cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.
- C. Perform fastening according to the following unless other fastening methods are indicated:
  - 1. Wood: Fasten with wood screws or screw-type nails.
  - 2. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
  - 3. New Concrete: Concrete inserts with machine screws and bolts.
  - 4. Existing Concrete: Expansion bolts.
  - 5. Instead of expansion bolts, threaded studs driven by a powder charge and provided with lock washers may be used in existing concrete.
  - 6. Steel: Welded threaded studs or spring-tension clamps on steel.
    - a. Field Welding: Comply with AWS D1.1.
  - 7. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or other items.
  - 8. Light Steel: Sheet-metal screws.
  - 9. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.

### 3.8 IDENTIFICATION MATERIALS AND DEVICES

- A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.

- C. Self-Adhesive Identification Products: Clean surfaces before applying.
- D. Identify raceways and cables with color banding as follows:
  - 1. Bands: Colored adhesive marking tape. Make each color band **2 inches (51 mm)** wide, completely encircling conduit, and place adjacent bands of two-color markings in contact, side by side.
  - 2. Band Locations: At **50-foot (15-m)** maximum intervals in straight runs, and at **25-foot (8-m)** maximum intervals in congested areas.
- E. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.
- F. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate **6 to 8 inches (150 to 200 mm)** below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed **16 inches (400 mm)**, overall, use a single line marker.
- G. Color-code 208/120-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:
  - 1. Phase A: Black.
  - 2. Phase B: Red.
  - 3. Phase C: Blue.
  - 4. Neutral: White.
  - 5. Ground: Green.
- H. Install warning, caution, and instruction signs where required to comply with 29 CFR, Chapter XVII, Part 1910.145, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.

### 3.9 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.
- B. Repair and refinish disturbed finish materials and other surfaces to match adjacent undisturbed surfaces. Repair and refinish materials and other surfaces by skilled mechanics of trades involved.

3.10 FIELD QUALITY CONTROL

A. Inspect installed components for damage and faulty work, including the following:

1. Raceways.
2. Building wire and connectors.
3. Supporting devices for electrical components.
4. Electrical identification.
5. Cutting and patching for electrical construction.
6. Touchup painting.

3.11 REFINISHING AND TOUCHUP PAINTING

A. Refinish and touch up paint.

1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
2. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.
3. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
4. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.12 CLEANING AND PROTECTION

- A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.
- B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION 16050