

PROJECT MANUAL

**Lattanzi Field
(Ward Park)
Smyrna, Georgia**

FOR

**City of Smyrna-Parks and Recreation
200 Village Green Circle
Smyrna, Georgia 30080**

September 20, 2018

Construction Issue

**Foley Design Associates Architects, Inc.
950 Joseph E Lowery Blvd. NW
Atlanta, Georgia 30318**

FDA Project No. 201749

PROJECT

Lattanzi Field
Baseball Field Backstop Replacement
Smyrna, Georgia

OWNER

City of Smyrna- Parks and Recreation
200 Village Green Circle
Smyrna, Georgia 30080

ARCHITECT

Foley Design Associates Architects, Inc.
1513 Cleveland Avenue – Building 100, Suite 102
East Point, Georgia 30344
(404) 761-1299

STRUCTURAL ENGINEERS

C2O Engineers
3750 Palladium Village
Building 200 – Suite 230
Marietta, Georgia 30066
(678) 644-4466

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GENERAL CONDITIONS

AIA Document A201 – 2007

General Conditions of the Contract for Construction are included in these specifications by reference only. This document can be purchased directly from the AIA or online from AIAbookstore.com.

AIA Document A201-2007 can be viewed online at the following link;

http://www.ironwarrior.org/ARE/Construction_Documents/AIA/A201-2007_Working_Draft.pdf

END OF SECTION

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SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

INTRODUCTION: The following paragraphs supplement, modify, change, delete or add to the General Conditions of the Contract for Construction AIA Document A201, 2007 Edition. Where any part of the General Conditions is modified or voided by these conditions, the unaltered provisions of the part shall remain in effect.

ARTICLE 1: GENERAL PROVISIONS

Article 1 is unchanged.

ARTICLE 2: OWNER

Add the following:

"2.1.3: Whenever the word "Owner" is used in the Contract Documents it shall mean City of Smyrna- Parks and Recreation and their designated representatives."

ARTICLE 3: CONTRACTOR

Add the following:

Delete paragraph 3.10.1 in its entirety and substitute the following paragraph 3.10.1

"3.10.1 The Contractor, immediately after being awarded the contract and prior to starting construction, shall prepare and submit for the Owner's and Architect's approval an estimated Progress Schedule for the work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the work and project, shall be related to the entire project to the extent required by the contract documents and shall provide for expeditious and practicable execution of the work. Such schedule when approved shall become a part of the contract. The contractors progress schedule shall be in the form of a bar chart and shall be updated monthly

Add the following:

"3.12.11: Shop drawings shall include, notwithstanding any

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additional information required in trade sections: All working and erection dimensions; views as required to show fully all construction and fabrication methods, profiles and materials; all data on anchoring and relationship to other construction, sizes, types, finishes and colors of materials. Each sheet of shop drawings shall indicate name of project, Contractor's stamp indicating approval, date of submittal and date of any previous submittals. Shop drawings and samples which are not stamped indicating the Contractor's prior review shall be returned by the Architect without review and with a requirement for re-submittal."

"3.12.12: Submission of shop drawings shall be accompanied by transmittal letter, containing project name, Contractor's name, number of drawings, titles and other pertinent data."

"3.19: The Contractor work hours shall conform to requirements mandated by the City of Smyrna. Typical work hours for Monday through Friday are 7AM to 6PM. Typical work hours for Saturday are 9AM to 6PM. No work is to be done on Sundays."

ARTICLE 4: ARCHITECT

Add the following:

"4.1.4: Wherever the word "Architect" is used in the Contract Documents is shall mean Foley Design Associates Architects, Inc., and their consultants."

ARTICLE 5: SUBCONTRACTORS

Add the following:

"5.2.5: Only subcontractors approved by the Owner will be acceptable for work."

ARTICLE 6: CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

Article 6 is unchanged.

ARTICLE 7: CHANGES IN THE WORK

Add the following:

"7.2.2 To accompany all change orders, the Contractor shall furnish a breakdown of expenditures for labor and materials by units and quantities. The contractor shall obtain and furnish

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as back-up to the contractor's breakdown a separate breakdown for each subcontractor's charges prepared by each subcontractor on the letterhead of the subcontractor and properly signed by the subcontractor.

"7.2.3 The percentage of compensation to the contractor and all sub-contractors shall be determined and agreed upon by the owner, architect and contractor prior to the execution of the construction contract. In the event that the percentage of compensation for the contractor and subcontractor are not determined prior to the execution of the construction contract, the maximum percent of compensation shall be as follows:

Contractor - 10% of all labor and materials performed by the contractor including work by subcontractors.

Sub-contractors - 7½% of all labor and materials performed by the sub-contractor.

7.5 SUBSURFACE CONDITIONS

7.5.1 Material below the surface of the earth is assumed to be earth and other material that can be removed by power shovel or similar equipment. Should conditions encountered below the surface of the ground be at variance to conditions indicated by drawings or specifications, the contract sum shall be adjusted as provided in the contract for changes in the work upon claim by either party made in writing within a reasonable time after the first observation of the conditions, provided: that the contractor shall in any event give written notice to the Owner before proceeding to execute any change resulting from subsurface conditions and, provided further: that, the Owner shall not be liable to the contractor for any claim (occasioned by the aforesaid subsurface conditions) other than or in excess of the allowances permitted for unit cost stated in the form of agreement.

Article 8: TIME

Add the following:

"8.2.4 If, at any time during the progress of the Work, Contractor's actual progress appears to be inadequate to meet the requirements of this Contract, Owner may notify Contractor of such imminent or actual noncompliance with this Contract. Contractor shall, at his expense, thereupon take such steps as may be necessary to improve his progress and Owner may require

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an increase in the labor force , the number of shifts, and or overtime operations, days of work and/or the amount of construction plant, all without additional cost to Owner. Neither such notice by Owner nor Owner's failure to issue such notice shall relieve Contractor from his obligation to achieve the quality of work and rate of progress required by this Contract.

"8.3.4 Weather Delays

Based on data provided by the National Weather Service in Peachtree City, Georgia, for the Atlanta, Georgia area, the following number of days shall be included by the contractor in the construction schedule for anticipated normal precipitation days:

January 11 days	February 9 days	March 10 days
April 8 days	May 9 days	June 10 days
July 12 days	August 10 days	September 7 days
October 6 days	November 8 days	December 11 days

The contractor shall be given consideration by the architect for additional time for inclement Weather delays over and above the amount of inclement weather days normally anticipated at the location of the project site listed above.

Inclement weather is defined as precipitation; wet conditions on the job site or other unusual, uncustomary, out of the ordinary conditions that occurred on the job site which produced conditions such the contract work could not be accomplished.

The contractor shall make claim for any such weather delays at the end of each month of the occurrence. No consideration shall be given to any claim for inclement weather delays beyond the subsequent month of the occurrence. Claims shall be submitted to the architect as a request for change order with substantiating documentation indicating the amount of days normally anticipated for the given period of time for the local area of the project site and the amount of days requested by the contractor over an above the amount normally anticipated as listed above.

Article 9: PAYMENTS AND COMPLETION

Add the following:

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"9.2.1 The Schedule of Values required by 9.2 shall be furnished in a form similar to AIA Document G702, Application and Certificate for Payment, with each major item or work and each subcontracted item of work shown as a line item."

"9.3.1.3 Application for payment shall be made using AIA Documents G702, Application and Certificate for Payment, and G703, Continuation Sheet.

Delete paragraph 9.3.2 entirely and insert the following new paragraph 9.3.2:

"9.3.2 Payment shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. Payment shall, if required by the Owner or the Architect, be conditional upon submittal by the Contractor of bills of sale or such other procedure as will establish the Owner's title to such material or otherwise adequately protect the Owner's interest. The Contractor is responsible for the existence, protection, and, if necessary, replacement of materials until the date of Substantial Completion."

Article 10: PROTECTION OF PERSONS AND PROPERTY

Article 10 is unchanged.

Article 11: INSURANCE AND BONDS

Add the following:

"11.1.5 The Contractor shall provide Builder's Risk Insurance for this project for work which will be made a part of the insured structure to 100% of the insurable value thereof covering fire, extended coverage, vandalism and malicious mischief."

Article 12: UNCOVERING AND CORRECTION OF WORK

Article 12 is unchanged.

Article 13: MISCELLANEOUS PROVISIONS

Delete paragraph 13.5.1 in its entirety and substitute the following:

13.5.1 Tests, inspections and approvals of portions of the

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work required by the Contract Documents of by Laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with the testing laboratory. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so the Architect may observe such procedures.

13.5.1.1 Inspections and Tests required to establish compliance with the Contract Documents, except as otherwise provided in the Contract Documents, will be made by a pre-qualified and independent testing agency approved by the Architect and the Owner. The Contractor will pay the cost of all services of such agency. Representatives of the testing agency shall have access to the work at all times. The Contractor shall provide facilities for such access in order that the agency may properly perform its functions. The Contractor shall provide a copy of all required test reports to the Architect.

Article 14: TERMINATION OR SUSPENSION OF THE CONTRACT

Article 14 is unchanged.

END OF SECTION

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SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. The work for "Lattanzi Field", shall include, but is not limited to:

Scope of work includes the replacement of the baseball field backstop. This includes demolition of existing and new installation of CMU backstop wall with brick veneer and backstop padding as well as a suspended netting system. The netting system, including but not limited to, steel posts, cabling, clamps, eye bolts/anchors of whatever type appropriate for wall type where cable assembly is to be installed, is to be provided as "design build".

The netting shall be constructed of #36 nylon, 1-3/4 inches (44 mm) mesh, knotted netting, color: Black (weather treated for outdoors). Cord tensile strength: 340 lbs.

All parts of the netting system are in this scope of work and the design, engineering and construction of the netting system are to be provided by a single, qualified entity. Where drawings note that parts of the netting system are "by others", this shall mean "designed by others" and indicates the design build system described above.

In addition, the area directly adjacent to the new backstop wall on the field side shall be brought back to original condition prior to construction. The area directly adjacent to the new backstop wall on the other side of the wall (and where the existing planter will be demolished) shall be grassed with sod.

Other minor work scopes are described in the contract documents.

An example tie back netting system installation guide has been included following this section to provide

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design intent for this project along with the layout provided within the drawings.

1.02 OWNER FURNISHED ITEMS:

- A. Items to be furnished and installed under separate contract are as follows:
 - 1. None
- B. Owner's Duties:
 - 1. None

1.03 CONTRACTOR'S RESPONSIBILITIES:

- A. Contractor's Duties:
 - 1. Designate required installation date for each utility in Construction Schedule, if applicable.
 - 2. Promptly inspect installations, report damaged or defective items.
 - 3. Protect from exposure to elements, from damage.
 - 4. Repair or replace items damaged as result of Contractor's operations.
 - 5. Coordinate with owner and architect to schedule contract required testing, third party special inspections and observations by architect, if applicable.

1.04 CONTRACTOR USE OF SITE:

- A. General: See General Conditions.
- B. Storage Facilities and Work Areas:
 - 1. Areas to be used shall be agreed upon by the Owner and the Contractor.
 - 2. Allow suitable and proper space for the use of Subcontractors.
 - 3. Should it become necessary at any time to move

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materials, sheds, or storage platforms; the Contractor shall move them as and when directed.

1.05 GRADES, LINES, AND LEVELS:

- A. Owner's Duties: Establish lot lines, restrictions and a permanent bench mark as indicated on the Drawings.
- B. Contractor's Duties:
 - 1. Establish, maintain and be responsible for all other grades, lines, levels and bench marks.
 - 2. Verify all grades, lines, levels, and dimensions indicated on the Drawings.
 - 3. Report to the Architect any errors, inconsistencies or omissions; see General Conditions, Subparagraph 3.2.2. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

1.06 LAYING OUT AND LOCATING THE WORK:

- A. Laying out the Work: Establish column lines and otherwise fully and completely lay out all Work required by the Contract Documents.

1.07 PROJECT COORDINATION:

- A. Measurements and Dimensions:
 - 1. Before ordering materials or doing work which is dependent for proper size or installation upon coordination with building conditions, verify all dimensions by taking measurements and be responsible for their correctness.
 - 2. No consideration will be given claims based on differences between the actual dimensions and those indicated on the Drawings.
 - 3. Report to the Architect any discrepancy between the Drawings and/or the Specifications and the existing conditions. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

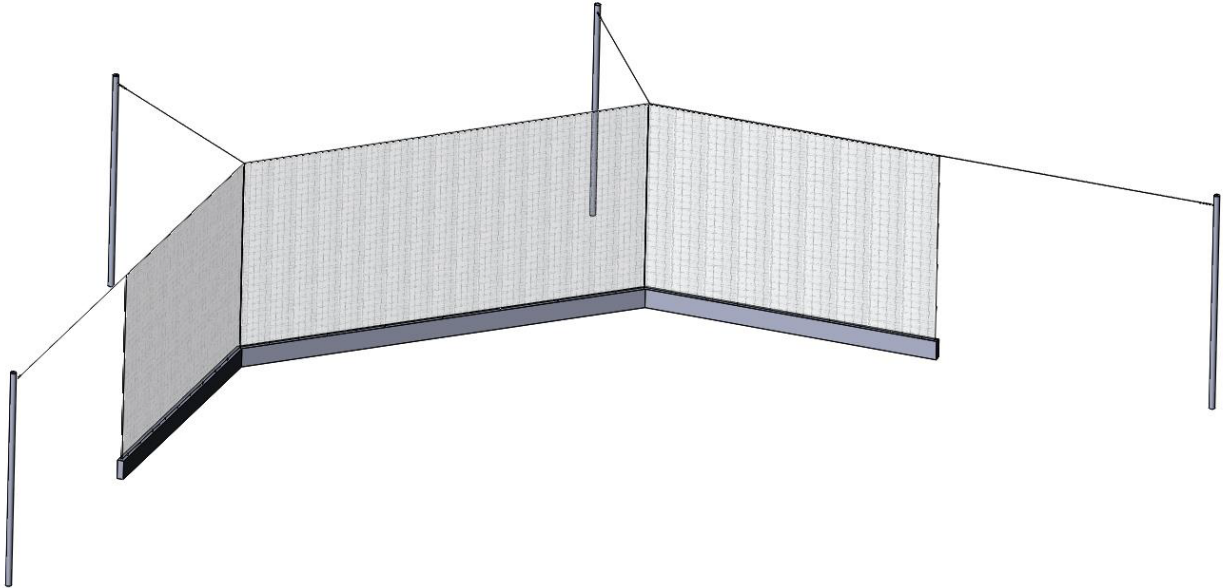
1.08 REFERENCES:

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- A. When reference is made to the standard specifications or nationally known organizations, the edition in effect on the date shown in the Project Manual shall govern.
- B. When specific articles, divisions, sections and headings are not given, such specifications shall apply in full.
- C. Standard specifications when included by reference to letter and/or number designation shall form a part of this Specification as if quoted in full.

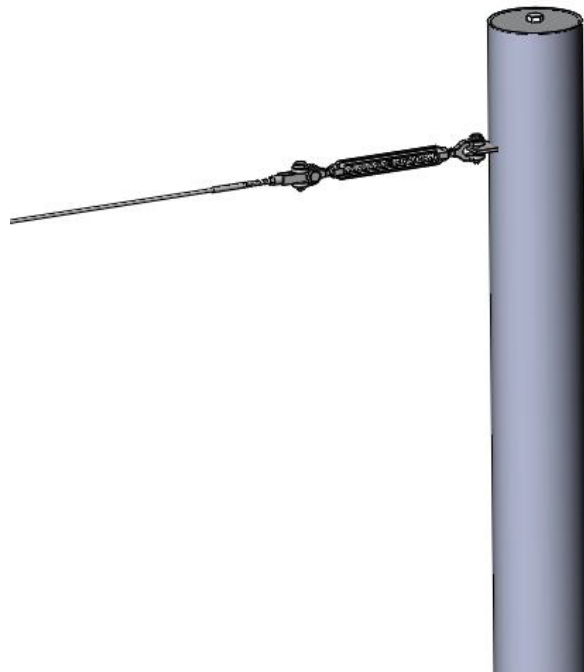
END OF SECTION

Pull Back Tensioned Netting System Installation Instructions



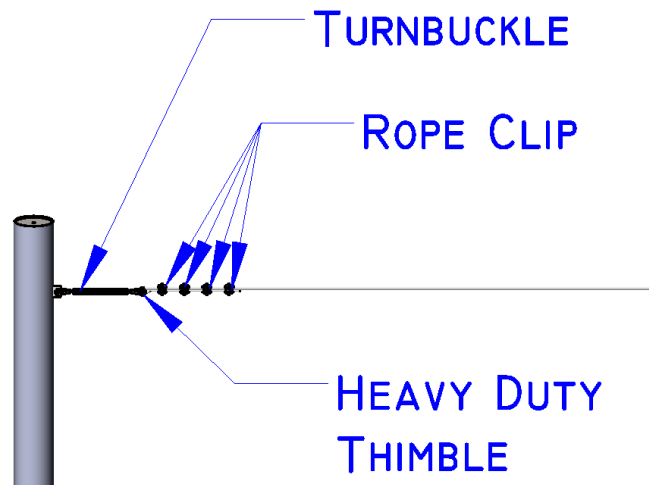
1. Setting Poles

- a) After determining the location and elevation of associated poles, prepare hole according to the foundation design.
- b) Use a lifting strap at the top of the pole to lift pole into position.
- c) Secure pole and embed in concrete footer according to design.

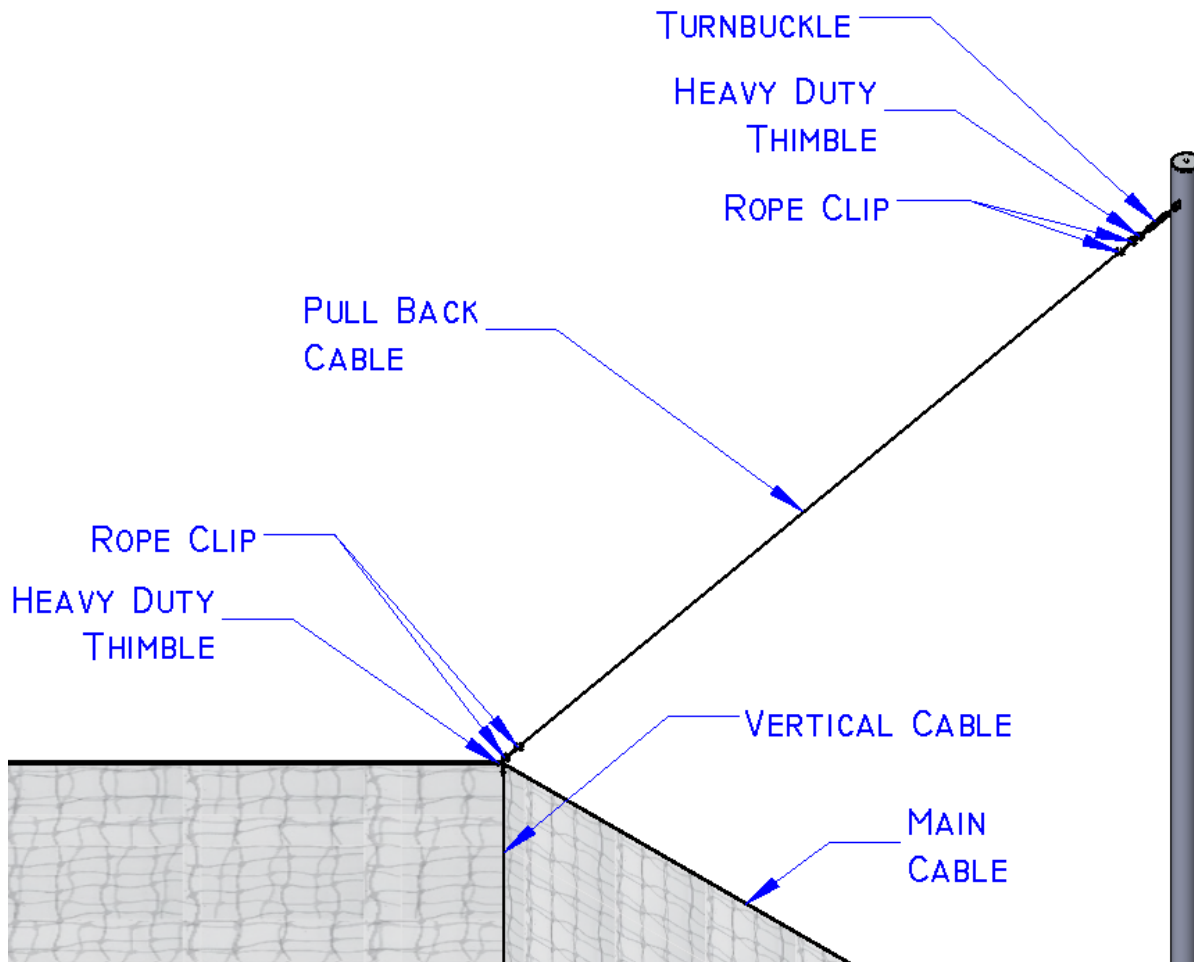


2. Assembly Hardware

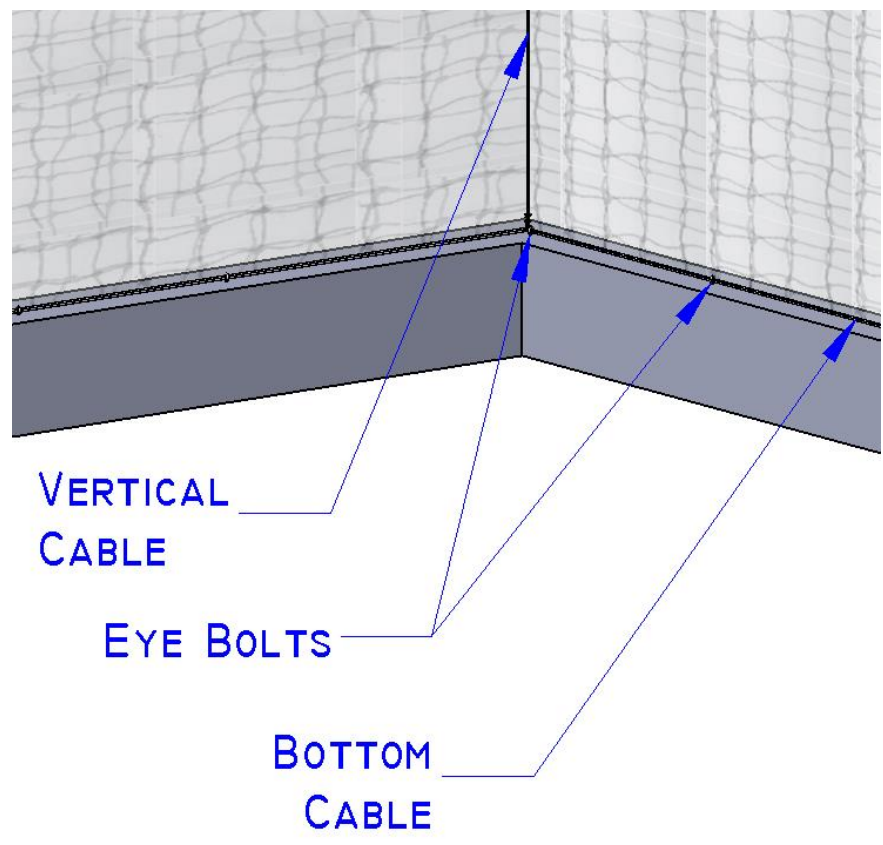
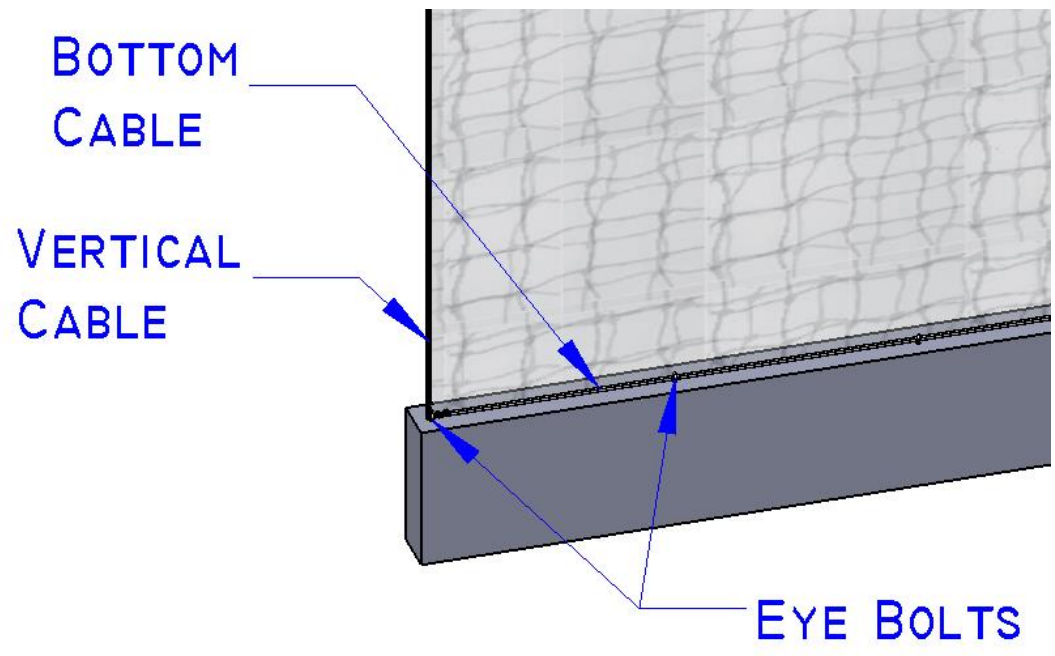
- a) Starting with the main horizontal cables, assemble cable turnbuckles at each end.



- b) Locate where the corner pull back cables will be located. There will be a vertical cable at each pull back and at each end of the net.



- c) The vertical cables can be secured to the bottom cable or an eye bolt. Assemble cable with thimbles and rope clips at each end. Bottom cable needs to be run through the eye bolts, or equivalent, to secure the cable and hold it down.



- d) Once all of the cables have been mounted on the poles and vertical cables have been set to length, the sag of the main cable can now be removed by tightening the turnbuckles. Do not tighten turnbuckles so much that the poles themselves deflect.



- e) Now the nets can be hung from the assembled cables. Using the zip-ties, pull the net to top cable and each side cable. The net may then be secured to the cable using the black rope provided, looping through each square, around the net binding and cable.



REPLACEMENT PARTS

Contact Sportsfield Specialties Customer Service at 1-888-975-3343 for replacement hardware.

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SECTION 01 25 13

SUBSTITUTION PROCESS

PART 1 - GENERAL

1.01 Substitutions

- A. Products are specified by reference standards, 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 has the option of choosing among those named. When proprietary products are specified, substitutions will be allowed only by substitution provisions specified herein.
- B. If it is desired to use products different from those indicated in the Contract Documents, the party requesting the substitution shall make written application as described herein. The burden of proving equality of proposed substitutions rests on the party making the request for substitution.
- C. Requests for substitutions of products in lieu of those specified by proprietary names shall be submitted in compliance with the following requirements:
 - 1. Requests for approval of substitutions shall be written and delivered to the Architect's office no later than ten days prior to the bid date. No substitutions will be accepted after this date.
 - 2. Identify product for which substitution is requested by brand name and/or catalog number, together with the Section and paragraph number where specified or incorporated by Addendum.
 - 3. Identify proposed substitution in a similar manner and include complete data substantiating compliance with the Contract Documents.

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4. If proposed substitutions cover work of Structural, Mechanical or Electrical Consulting Engineers, submit requests in duplicate, one copy directly to the Consulting Engineer and one copy to the Architect's office.
- D. Separate requests shall be made for each proposed substitution. Where multiple substitutions are related to a complete assembly these may be covered by a single request.
- E. An addendum will be issued to prospective bidders prior to the date set for opening of bids, if a proposed substitution is accepted by Architect. Unless substitutions are received and approved as described above, the successful bidder shall be responsible for furnishing materials and products in accordance with the Contract Documents.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

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SECTION 01 33 23

SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTIONS

A. Definitions:

1. Samples: Physical examples prepared to illustrate materials, equipment or workmanship and to establish standards by which work will be judged as complying with contract requirements.
2. Shop Drawings: Newly prepared information, drawn to accurate scale to indicate actual materials, methods, or product intended by the Contractor for use on this project.
3. Product Data: Dated, printed literature of a product manufacturer which describes product and installation procedures. Product data may include test and performance data, illustrations, standard brochures and special details.
4. Submittals: General term including samples, shop drawings and product data, as applicable.

B. General Provisions:

1. Provisions in this section are mandatory procedures for preparing and submitting samples, shop drawings and product data.
2. Submittals shall be in orderly sequence and timed to cause no delay in the Work.
3. Job delays occasioned by requirement of resubmission of samples, shop drawings and product data not in accordance with Contract Documents are Contractor's responsibility, and will not be considered valid justification for extension of contract time.
4. Commence no portion of work requiring submittals until submittal has been approved by Architect.
5. Date and mark submittals to show the name of the project, Architect, Contractor, originating subcontractor, manufacturer or supplier, and separate detailer if pertinent.

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6. Completely identify on submittals specification section and locations at which materials or equipment are to be installed.
7. Reproductions of contract drawings are NOT acceptable as shop drawings.
8. Accompany submission of shop drawings and samples with one copy of a transmittal letter containing project name, Contractor's name, number of drawings and samples, titles and other pertinent data. Transmittal shall outline any deviations, if any, in submittals from requirements of the contract documents.

1.02 SAMPLE PREPARATION

- A. Prepare samples in sizes, shape and finish in accordance with provisions of individual specification sections.
- B. Samples furnished under this section are not to be confused with full size, on-the-site "Mock-Ups" called for in some specification sections.
- C. The number of samples submitted shall be the number required by the Contractor, plus one which will be retained by Architect, unless otherwise indicated.

1.03 SUBMISSION OF SAMPLES

- A. Submit samples of size specified or of sufficient size to indicate general visual or functional effect.
- B. Where samples must show a range of color, texture, finish, graining, or other similar properties, submit sets illustrating the full scope of this range.
- C. Retain one set of "Approved" samples at the job site for comparison with job construction.

1.04 SHOP DRAWING PREPARATION

- A. Drawing shall conform to the following requirements:
 1. Number drawings consecutively.
 2. Indicate working and erection dimensions and

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relationships to adjacent work.

3. Show arrangements and sectional views, where applicable.
4. Indicate material, gauges, thicknesses, finishes and characteristics.
5. Indicate anchoring and fastening details, including information for making connections to adjacent work.
6. Furnish complete installation instructions to achieve Architect's and manufacturer's designed and planned intentions.

1.05 SUBMISSION OF SHOP DRAWINGS

- A. Unless otherwise specified, the number of copies of shop drawings which the Contractor shall submit is the number which the Contractor shall want returned by the Architect plus two copies which will be retained by the Architect. Shop drawing shall include fabrication, erection, layout and setting drawings and such other drawings as may be required under various sections of the Specification. Submit until final approval is obtained. Submit additional prints as required for actual construction of project.

1.06 PRODUCT DATA PREPARATION

- A. Include product manufacturer's standard printed material, dated, with product description and installation instructions indicated. Product data may also contain test and performance data, illustrations and special details.
- B. Form: Number of copies submitted shall be the number required by Contractor plus two which will be retained by the Architect.
- C. Data not related to this project shall be deleted from manufacturer's standard data.

1.07 SUBMISSION OF PRODUCT DATA

- A. Submit manufacturer's product data including catalog sheets for materials, equipment and fixtures, showing dimensions, performance

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characteristics and capacities, wiring diagrams and controls, schedules and other pertinent information as required. Where printed materials describe more than one product or model, clearly identify which is to be furnished. Submit additional copies as required for actual construction of project.

- B. Submit in brochure form; minimum sheet size is 8-1/2" by 11".

1.08 CONTRACTOR'S REVIEW

- A. Review submittals and stamp with approval prior to submission to Architect.
- B. Schedule submittals with reasonable promptness and in orderly sequence as to cause no delay in the Work.
- C. By approving submittals, Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- D. Where work is indicated "By others", Contractor shall indicate responsibility for providing and coordinating such work; whether by subcontractors or under separate contracts.
- E. Contractor agrees that submittals processed by Architect are not Change Orders; that purpose of submittals by Contractor is to demonstrate that Contractor understands design concept; that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing fabrication and installation methods he intends to use.
- F. Contractor represents by submitting samples, shop drawings and product data that he has complied with provisions specified above. Submissions made without Contractor's approval indicated thereon will be returned without being reviewed for compliance with this requirement.

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1.09 ARCHITECT'S REVIEW AND APPROVAL

- A. Architect's approval is only for conformance with design concept of project and with information in Contract Documents. Architect's approval of a specific item shall not indicate approval of an assembly in which item is a component.
- B. Architect's approval of submittals shall not relieve Contractor of responsibility for deviation from requirements of Contract Documents. Architect's approval shall not relieve Contractor from responsibility for errors or omissions in submittals.
- C. Submittals required to be submitted "For Architect's information only" are required to demonstrate that the Work complies with performance requirements of the Contract Documents. Such submittals, if acceptable to Architect, will not be returned to Contractor.
- D. Architect will review each submittal, mark it with appropriate action, and return it to Contractor within two weeks of receipt, except where it must be held for coordination, and the Contractor is so advised. Submittals will be marked by Architect as follows:
 - 1. "No Exceptions Taken"/"Make Corrections Noted": indicates the drawings have been reviewed for conformance with design and no exceptions are taken or make corrections noted. Proceed with the work.
 - 2. "Revise and Resubmit"/"Rejected": indicates drawing to be revised and resubmitted for review prior to proceeding with the work, or that submittal does not comply with Contract Documents.
- E. Architect will return submittals to Contractor for distribution to appropriate parties.
- F. The architect shall make timely reviews of all submittals in order to prevent possible delays in the construction. However, it is standard in the industry for the contractor to expect a minimum of

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10 working days to allow the architect to properly review each individual submittal and 15 working days to allow proper review of submittals by the architect's consultants for work designed by the consultant. The contractor shall allow for such time in the construction schedule to allow reviews by the architect and the architect's consultants.

1.10 RESUBMISSION

- A. Make corrections and changes indicated for unapproved submissions and resubmit in same manner as specified above, until Architect's approval is obtained.
- B. In resubmission transmittal direct specific attention to revisions other than corrections requested by Architect on previous submittals, if any.

1.11 DISTRIBUTION

- A. Contractor is responsible for obtaining and distributing copies of submittals to his subcontractors and material suppliers after as well as before final approval. Prints of reviewed shop drawings shall be made from transparencies which carry the Architect's appropriate stamp.
- B. Contractor shall maintain a file of approved submittals for duration of project (at least one copy at the job site).

1.12 MAINTENANCE MANUAL

- A. Submit to Architect (prior to Substantial Completion) two copies of a "Maintenance Manual" for Owner's guidance. Assemble in a three-ring binder with typewritten index and containing full details for care, maintenance, and operating instructions of products, finished surfaces, equipment, mechanical, electrical and other items with moving parts, and landscape plantings. See Section 01 77 00, Contract Close-Out, paragraph 1.02A.
- B. Obtain from subcontractors, vendors and manufacturers and include data relating to products

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equipment, motors, wiring diagrams, and other information pertaining to overall cleaning and maintenance.

- C. Include a list of the name, address and phone number of nearest sales and service organization for each item.
- D. Include in the "Maintenance Manual" guarantees and warranties as required and specified in the various sections.
- E. Where the "Maintenance Manual" data is called for under separate sections, include it in the "Maintenance Manual" described in this section.
- F. Arrange data in "Maintenance Manual" in same order as the Specifications.

1.13 OPERATING INSTRUCTIONS

- A. Submit to the Owner's representative written and oral instructions (by trained personnel) in the care, use, maintenance and operation for each product.
- B. Instructions shall cover a one calendar year cycle of use. Issue instructions in accordance with, and in addition to, other information required for the "Maintenance Manual".
- C. Insert written operating instructions in "Maintenance Manual". Arrange operating instructions in same order as the Specifications. See Section 01700, Contract Close-Out, paragraph 1.02B.

1.14 SAMPLE STORAGE

- A. The Contractor shall provide adequate storage space on the job site for the storage of samples approved by the Architect. Samples shall be sheltered and protected from deterioration or damage for the duration of the Work.
- B. Upon completion of the Work, the Contractor shall dispose of all samples in accordance with the Architect's instructions.

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PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

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SECTION 01 66 00

STORAGE, PROTECTION AND HANDLING

PART 1 - GENERAL

1.01 SUBMITTALS:

- A. Submit handling and storage requirements with submittals for each product specified. Verify by letter to Architect that installer has received storage and handling instructions.

1.02 DELIVERY:

- A. The contractor shall inspect all materials delivered to the project to assure materials are delivered undamaged and in new and usable condition. Any damaged materials shall be rejected.
- B. The contractor shall reject any materials that have been delivered to the project that have been delivered wet or that have become contaminated by mold. Any such material shall be rejected and immediately removed from the project.

1.03 STORAGE, PROTECTION AND HANDLING:

- A. Contractor shall receive, store and protect all products and materials from damage, deterioration and contamination until incorporated into the Work and until the date of Substantial Completion and final acceptance by the Architect.
- B. Requirements of this section are general in nature. Refer to individual specification sections for additional, specific requirements.
- C. Deliver manufactured products to project site in manufacturer's original packaging with labels and seals intact. Labels shall indicate manufacturer and product name, description, mixing and application instruction. Where applicable, labels shall indicate fire-resistive classifications.
- D. Inspect materials upon delivery to ensure proper

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material, color, type and quantity.

- E. Store materials and equipment under cover, off ground at least 6" and protected from excessive heat and freezing, except for materials not subject to damage or deterioration by contact with environmental conditions. Observe manufacturer's recommendations for positioning, separation and ventilation, as applicable.
- F. Prevent corrosion, soiling or breakage of materials or contact with deleterious materials.
- G. Deliver finish materials only after spaces are enclosed and adequate indoor storage facilities are available. Deliver items such as millwork only after spaces approximate completed conditions.
- H. Handle materials and equipment to prevent damage, deterioration or contamination. Install no materials which are physically damaged or stained prior to time for installation.
- I. Store and handle paints and products subject to spillage in areas where spills will not deface finished surfaces or other work.
- J. Flammable or hazardous materials:
 - 1. Store minimum quantities in protected areas.
 - 2. Provide appropriate types of fire extinguisher near storage areas.
 - 3. Observe manufacturer's precautions and applicable ordinances and regulations.
- K. Comply with manufacturer's instructions and recommendations for product storage and handling.
- L. Comply with manufacturer's product data in all aspects of basic materials usage, handling, installation and substrate preparation, except where more stringent requirements are specified.

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1.04 FINISHED SURFACES:

- A. Finished surfaces shall be clean, uniform and free of damages, soiling or defects in material and finish.
- B. Protection:
 - 1. Protect finished surfaces from damage and soiling during application, drying or curing, as applicable.
 - 2. Provide temporary protective coverings or barriers required.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

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SECTION 01 74 23

FINAL CLEANING

PART 1 - General

1.01 GENERAL REQUIREMENTS:

- A. Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish at all times during the construction period. At completion of the Work, he shall remove all waste materials and rubbish from and about the Project, as well as his tools, construction equipment, machinery and surplus materials, except those specifically required by the Contract Documents to be left for the Owner's maintenance.
- B. If Contractor fails to keep project clean or to clean up prior to Date of Substantial Completion, the Owner may do so and the cost thereof will be charged to Contractor.

1.02 SAFETY REQUIREMENTS:

- A. Store volatile waste in covered metal containers.
 - 1. Allow no volatile wastes to accumulate on project site.
 - 2. Provide adequate ventilation during use of volatile substances.
- B. Comply with local anti-pollution laws. Do not burn or bury waste materials and rubbish on project site.
- C. Dumping of excess concrete for any reason shall not be allowed on site.
- D. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains, on pavements or in gutters or elsewhere on project site.
- E. Dispose of no waste or cleaning materials which contain materials harmful to plant growth on project site. Clean up materials which are accidentally spilled immediately.

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1.03 CLEAN-UP DURING CONSTRUCTION:

- A. Execute cleaning procedures daily to insure that building, project site and adjacent properties are maintained free from debris and rubbish.
- B. Wet down materials subject to blowing. Throw no waste materials from heights.
- C. Provide covered, on-site containers for waste collection. Place all waste materials and rubbish in containers in an expeditious manner to prevent accumulation. Remove waste from project site when containers become full.
- D. Legally dispose of all waste materials, rubbish, volatile materials and cleaning materials off project site.
- E. Dispose of no materials in waterways.
- F. At time finishing work begins, maintain project in a "broom-clean" state until Date of Substantial Completion. Protect newly finished and clean surfaces from contamination during cleaning operations.
- G. Allow no accumulation of debris which contributes to survival or spread of rodents, roaches or other pests.
 - 1. Remove debris containing food scraps on a daily basis.
 - 2. Remove visually obvious (10" x 10" or larger) refuse daily.
 - 3. Should pests inhabit project. Contractor shall be responsible for securing services of a pest exterminator at no additional cost to the Owner.

1.04 FINAL CLEAN UP:

- A. Prior to Date of Substantial Completion clean all finished surfaces in accordance with manufacturer's product data and requirements specified in trade

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sections. All general and specific cleaning shall be performed prior to Contractor's request that the project be inspected for Substantial Completion.

- B. Remove dust, debris, oils, stains and fingerprints and labels from exposed interior and exterior finish surfaces, including glazing materials.
- C. Repair, patch and touch up marred surfaces to match adjacent finishes. Replace materials which cannot be repaired or patched to the satisfaction of the Architect.
- D. Clean disturbed areas of project site of debris.
 - 1. Broom clean paved surfaces. Remove oil and similar deleterious substances.
 - 2. Remove debris from grassed and landscaped areas and from undisturbed areas, if contaminated, in most expeditious and safe manner.
- E. Replace air conditioning filters if units were operated during construction period. Clean ducts, blowers and coils if units were operated without filters.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

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SECTION 01 77 00

CLOSE OUT PROCEDURES

PART 1 - GENERAL

1.01 CLOSE-OUT TIMING:

- A. Upon receiving the Certificate of Substantial Completion, Contractor shall prepare, assemble and transmit the items listed herein to the Owner, c/o Architect
- B. Unless additional quantities are specified elsewhere, submit items in duplicate.
- C. Documents, tools, equipment, demonstrations and other closing requirements shall be submitted or performed and accepted prior to Date of Final Acceptance.

1.02 DETAIL REQUIREMENTS:

- A. Maintenance Manuals: Submit two bound loose leaf maintenance manuals and two electronic copies of the maintenance manuals for the Owner's guidance indicating details and description for the care and maintenance of all fixtures, finish hardware, equipment, materials, finishes, finishes requiring special treatment specified in each trade section in the specifications inclusive. Label manuals. Include name of project, nature of information, Contractor/Subcontractor and name and address of local parts supplier and service organization for each entry. Refer to Section 01 33 23 Submittals.
- B. Operation Manuals: Submit two bound loose leaf operation manuals and two electronic copies of the maintenance manuals for all items of equipment for which the manufacturer has printed instructions. Assemble and submit manuals as indicated for maintenance manuals or include therewith. Include wiring and control diagrams and start-stop procedures for items of major equipment. This shall include all equipment specified in each trade section of the specifications inclusive.

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- C. Record Drawings: Submit one set of prints showing work installed at variance with Contract Documents or requiring the removal of finish material should maintenance be necessary. Drawings shall be numbered consecutively, and shall be laid out to show locations of subject elements, with base lines or dimension enabling exposure to elements with least disturbance to finish surface.
- D. Warranties: In accordance with Contract Conditions, Contractor shall furnish his warranty and shall require each subcontractor to furnish his warranty, in writing on the form bound hereinafter. An overall Warranty is required from the General Contractor for the entire project. Sub-Contractor Warranties are required on all work of each trade section of the specifications inclusive where a Sub-contractor was utilized to perform the work. Assemble, bind, label and transmit warranties as required for other manuals above. The period for warranties shall begin on the Date of Substantial Completion and shall continue for one year. Warranties shall state the Date of Substantial Completion established by the architect and date on which warranty expires. The following warranty forms are attached to this Section:
1. Contractor's Warranty Form
 2. Subcontractor's Warranty Form.
- E. Not Applicable
- F. Not Applicable
- G. Coordinate demonstrations and trial runs of equipment for the Owner's designated personnel and complete such demonstrations prior to Date of Final Acceptance.
- H. Forms: In addition to other requirements which may be in the Contract Documents, Contractor shall submit to the Architect as a condition for final payment, the following:
1. Completed and duly executed CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS, AIA Document G706;

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2. Completed and duly executed CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS, AIA Document G706A;
3. Completed and duly executed CONSENT OF SURETY COMPANY TO FINAL PAYMENT, AIA Document G707.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

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CONTRACTOR WARRANTY FORM

PROJECT:

LOCATION:

OWNER:

We _____,
Contractor for the _____ (Company Name)
above referenced project, do hereby warrant that all labor and
materials furnished and work performed 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 on

(Date of Substantial Completion affixed by Architect)

and expires on _____.
(One Year from Commencement Date)

Should any defect develop during the warranty period due to
improper materials, workmanship or arrangement, the defect
shall, upon written notice by the Owner, be made good 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: _____

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SUBCONTRACTOR WARRANTY FORM

PROJECT:

LOCATION:

OWNER:

GENERAL CONTRACTOR:

We _____,
Subcontractor for _____,
(List Trade)
as described in Specification Section(s)

(List appropriate sections of specifications)

do hereby warrant 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(s) from Date of Substantial Completion unless noted otherwise.

This _____ warranty commences _____ on
(Date of Substantial Completion Affixed by Architect)
and expires on _____.
(Expiration Date)

Should any defect develop during the warranty period due to improper materials, workmanship or arrangement, the defect shall, upon written notice by the Owner, be made good 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: _____

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TITLE: _____

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SECTION 02 32 00

SOILS TEST

PART 1 - GENERAL

1.01 SOILS TEST

- A. The Final Report of Geotechnical Exploration on Ward Park (Lattanzi Field) in Smyrna, Cobb County, Georgia, dated September 7th, 2018 is attached to hereinafter and made part of these Specifications.
- B. The enclosed report is issued for information only. The evaluations and recommendations contained in this report shall in no form be construed as requirements for the construction by the Bidders. The information contained in this report is not part of the construction requirements.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION



C • E • R • M
CORPORATE ENVIRONMENTAL RISK MANAGEMENT
Client-Centered Solutions

**Report of Subsurface Exploration and
Geotechnical Engineering Evaluation
Ward Park (Lattanzi Field) in Smyrna**

**Smyrna, Georgia
CERM Project No. 2018-1360-009**

For

**Croy Engineering.
Smyrna, GA**



C · E · R · M

September 07, 2018

Croy Engineering.

200 North Cobb Parkway North,
Building 400, Suite 413
Marietta, GA 30062

Attention: Mr. Tom Robinson, P.E.
Construction Engineering Manager

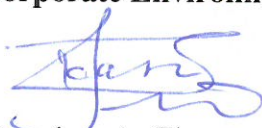
Subject: **Subsurface Exploration and Geotechnical Engineering Evaluation**
Ward Park (Lattanzi Field)
Smyrna, Georgia
CERM Project No. 2018-1360-009

Dear Mr. Robinson:

Corporate Environmental Risk Management, LLC is pleased to provide this report of our subsurface exploration and geotechnical engineering evaluation for the referenced project. This report was accomplished in general accordance with CERM Proposal No. 718-413, dated August 06, 2018.

The following report will present a brief summary of our pertinent findings and recommendations followed by our understanding of the proposed construction, methods of exploration employed, site and subsurface conditions encountered, and conclusions and recommendations regarding the geotechnical aspects of the project. Should you have any question regarding items discussed in this report, please do not hesitate to contact the undersigned.

Sincerely,
Corporate Environmental Risk Management, LLC


Kassahun A. Girmay, P.E.
Project Engineer II

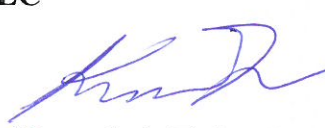

Kenneth A. Fluker, P.E.
Principal Engineer





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APPENDIX

Figure 1: Vicinity Map
Figure 2: Boring Location Plan
Soil Test Boring Procedures
Correlation with Standard Penetration Test Results
Soil Classification Chart
Soil Test Boring Logs (4)



1.0 SUMMARY

The following is a summary of our pertinent findings and recommendations. The reader is referred to the remaining text of this report for elaboration on these items.

1. The property appears generally suitable for the proposed construction from a geotechnical standpoint.
2. General subsurface conditions beneath the existing ground surface and pavement consist of previously placed fill overlying residuum. The existing fill extends to depth of 3 feet below the existing ground surface and top of pavement in boring B-1 and B-4, respectively. Below the existing fill, residuum extends to a depth of 15 feet, maximum exploration depth, below the top of pavement and ground surface.

Groundwater was encountered in boring B-1 at the time of drilling at a depth of 13 feet below the existing ground surface. No groundwater was encountered at the time of boring in the remaining borings. Stabilized groundwater levels were only measured in borings B-1 and B-4 at depths of 12 and 13 feet, respectively, below either the existing ground or pavement surfaces.

3. The concessions buildings proposed for this project may be supported on conventional shallow foundations bearing on the existing soil. The foundations for the proposed concessions building may be designed using a net allowable bearing pressure of 2000 psf. Some undercutting of the existing fill to a depth of 3 feet below the existing ground surface and top of pavement may be necessary at the time of footing construction depending on the quality and the compactness of the existing fill. The undercut areas should be replaced with structural fill or GA DOT 57 stone. The 10 feet of embedment planned for the tension cable poles is sufficient for the provided shear and overturning moment.
4. Excavations to the planned depths near all borings can generally be accomplished using conventional heavy earthmoving equipment.

2.0 PROPOSED CONSTRUCTION

The project consists of proposed tension cable poles for the backstop netting system and future concessions buildings within the existing ward Park (Lattanzi Field). The total length of each pole will be 45 feet of which 10 feet will be embedded below the ground surface in a drilled shaft. The annulus will be filled with concrete. The diameter of the proposed tension poles and their foundation shafts are planned to be 12 and 36 inches, respectively. The shear force on the tension cable poles will be less than 2 kips. The overturning moment caused by this shear force will be less than 70 ft-kips. The proposed future concessions buildings consist of two buildings that will occupy a portion of the existing building following demolition of the existing building. The column and wall loads will be less than 75 kips and 2 kips/foot, respectively.



3.0 METHODS OF EXPLORATION

To evaluate the subsurface conditions, the property was explored by a combination of a visual site reconnaissance, drilling four soil test borings (B-1 through B-4). All borings were drilled to a depth of 15 feet below the existing ground surface and top of pavement. The borings were located in the field by measuring distances and estimating directions from identifiable site features. Therefore, their locations shown on the Boring Location Plan, Figure 2, in the Appendix should be considered approximate.

The soil test borings were advanced by twisting continuous hollow stem auger flights into the ground. Standard Penetration Tests (SPT) were performed in general accordance with ASTM Standard D-1586 and soil samples were collected for visual classification. The results of the penetration tests, when properly evaluated, provide an indication of the relative consistency of the soil being sampled, the potential for difficult excavation, and the soil's ability to support loads. A more detailed description of the drilling and sampling process is included in the Appendix of this report.

Soil samples recovered during the drilling process were returned to the office where they were classified in general accordance with the Unified Soil Classification System (USCS). Detailed descriptions of the materials encountered at each boring location, along with a graphical representation of the Standard Penetration Test results, are shown on the Soil Boring Logs in the Appendix. The boring elevations were interpolated from topographic survey provided by Croy Engineering.

4.0 SITE DESCRIPTION, GEOLOGY AND SUBSURFACE CONDITIONS

4.1 Site Description

The project site is located within the northeast quadrant of the existing Ward Park (Lattanzi Field) in Smyrna, Georgia. The ground surface of the site is generally paved with asphaltic concrete. The site is bounded on its east side by Ward Street, north side by trees, south side by landscaping and west by the baseball field. The topography is relatively flat and level with drainage provided to storm water collection system located on east side of the site. The site is shown on the Vicinity Map, Figure 1, in the appendix.

4.2 Geology

The site is located in the Piedmont Physiographic Province of Georgia. The residual soils in the Piedmont are the result of the chemical and physical weathering of the underlying parent rock. The weathering profile usually results in fine grained clayey silts and silty clays near the surface, where weathering is more advanced. With depth, sandy silts and silty sands are found, often



containing mica. Below the residual soils, partially weathered rock is often found as a transition above relatively unweathered rock. In local practice, partially weathered rock is arbitrarily defined as residual soils with Standard Penetration Resistances in excess of 100 blows per foot (50 blows per 6 inches), and which can be penetrated by a power auger.

4.3 Subsurface Conditions

The conditions described in the following sections, and those shown in the appendix, have been based on interpolation of the soil test borings drilled at the site using generally accepted principles and practices of geotechnical engineering. However, conditions in this geology may vary intermediate of the tested locations, and even more so on previously developed property. Although individual soil test borings are representative of the subsurface conditions at the precise boring locations on the day drilled, they are not necessarily indicative of the subsurface conditions at other locations or other times. The nature and extent of variation between the borings may not become evident until the course of construction. If such variations are then noted, it will be necessary to re-evaluate the recommendations of this report after on-site observation of the conditions. The soil test borings encountered existing pavement, previously placed fill, and residuum. Descriptions of the materials encountered in the borings are provided in the following sections.

4.3.1 Surface Pavement

Asphaltic concrete pavement overlying stone base was encountered in borings B-2 through B-4. The asphaltic concrete was approximately 1½ inches thick. Approximately 4½, 4, and 2 inches of stone base was encountered in borings B-2, B-3, and B-4, respectively.

4.3.2 Previously Placed Fill

Previously placed fill was encountered in soil test borings B-1 and B-4 beneath the existing ground surface and top of pavement, respectively. The previously placed fill extends to a depth of 3 feet below existing ground surface or top of pavement. The fill is classified as silty sand with Standard Penetration Tests (SPT) of 4 and 10 blows per foot (bpf). Based on the SPT results, the fill represented by these samples would be considered lightly to moderately compacted.

4.3.3 Residuum

Residuum was encountered below the previously placed fill in borings B-1 and B-4 and below the existing surface pavement in borings B-2 and B-3. The residuum extends to the depth of maximum exploration, 15 feet below either the existing ground surface or top of pavement. The residuum was classified as silty sand and was of low to moderate compactness. Standard Penetration Test results ranged from 7 to 12 bpf with 9 to 11 bpf being typical.



4.3.4 Groundwater

Groundwater was encountered in boring B-1 at the time of drilling at a depth of 13 feet below the existing ground surface. No groundwater was encountered in the other borings at the time of drilling. Stabilized groundwater levels were measured in borings B-1 and B-4 at depths of 12 and 13 feet, respectively, below either the existing ground surface or top of pavement. Groundwater fluctuations of 5 feet or more are common in this geology. Groundwater fluctuations are also linked to changes in annual precipitation.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on the data gathered during this exploration, our understanding of the proposed construction, our experience with similar site and subsurface conditions and generally accepted principles and practices of geotechnical engineering. Should the proposed construction change significantly from that described in this report, we request that we be advised so that we may amend these recommendations accordingly. This report and the conclusions and recommendations provided herein are provided exclusively for the use of Croy Engineering and are intended solely for design of the referenced project.

5.1 Site Preparation

As an initial step in site preparation, unwanted vegetation and structures should be removed, stumps grubbed, and any organic topsoil stripped. All areas to receive fill should be evaluated prior to fill placement. The approval process should include proofrolling the subgrade with a fully loaded tandem axle dump truck (20 tons capacity) during a period of dry weather and under the observation of the geotechnical engineer. Any areas which "pump" or "rut" excessively under the weight of the proofrolling vehicle should be further evaluated, and may require undercutting or other remediation. The proofrolling can occasionally detect pits where stumps or other debris may have been buried, or other areas where weak surface conditions exist.

Any existing water bearing utilities beneath or near planned shallow foundations should be removed and rerouted a lateral distance at least of 10 feet beyond the edge of the foundation. Following removal, their excavations should be properly backfilled as described in Section 5.2.

5.2 Earthwork

The existing soils on the property visually appear suitable for reuse as structural fill. Moisture control may be necessary, primarily depending on the weather conditions at the time of construction. Any excavation near or below groundwater will produce soils excessively wet that will need substantial drying, which may not be practical. During dryer months, drying may be accomplished using mechanical means, but construction during wetter months will likely require lime or other chemical additives as a means of facilitating drying and soil compaction.



All structural fill should be compacted to at least 95 percent of the soil's standard Proctor maximum dry density, as determined by ASTM standard D 698. The upper foot of fill which will support pavements or slabs should be compacted to at least 98 percent of the soil's standard Proctor maximum dry density for improved support. In areas which are at or below the finished grade and which will support pavements or slabs, the upper 8 inches immediately below these systems should be scarified and recompacted to the 98 percent criteria. Structural fill should be free of organic material, have a plasticity index (PI) less than 20 and contain rock sizes no larger than 4 inches. Density testing should be performed by a soil technician to determine the degree of compaction and verify compliance with the project specifications. One field density test should be made for each one-foot lift. Testing frequency should be increased in confined areas. Areas which do not meet the compaction specifications should be recompacted to achieve compliance. In confined areas, such as utility trenches, the use of portable compaction equipment and thin lifts of 3 to 4 inches may be required to achieve compaction.

5.3 Shallow Foundation – Concessions Buildings

The proposed concessions building may be supported on conventional shallow foundations bearing on the existing soil using an allowable bearing pressure of 2000 psf. Some undercutting of the existing fill to a depth of 3 feet below the existing ground surface may be necessary at the time of footing construction depending on the quality and the consistency or compactness of the fill. All undercuts should be backfilled with structural fill in accordance with section 5.2 (Earthwork). Compacted GA DOT No. 57 stone may be used as an alternative structural fill.

The recommended bearing pressure is based on correlations with the Standard Penetration Test results. These correlations imply that a maximum total settlement of one inch is possible and a maximum differential settlement of half the total settlement is possible. Minimum foundation widths of 24 inches and 18 inches are recommended for individual column and strip footings, respectively, to preclude the possibility of localized soil bearing failures. Foundations should bear at least 18 inches below finished grades. This minimum embedment depth considers the frost depth, moisture changes in near surface soils due to drought, and the potential for near surface disturbance during the life of the foundation. We anticipate the frost depth to be less than one foot.

As with any construction, all foundation excavations should be evaluated by a geotechnical engineer, who will verify that the design bearing pressure is available intermediate of boring locations, and that foundations are not immediately underlain by worse conditions. If the engineer finds localized conditions of weaker or organic soil below an individual footing, the undesirable soil may be undercut depending upon the actual conditions found. Undercutting at the time of the foundation evaluation involves the engineer directing the contractor to remove undesirable soil or debris that negatively impacts the foundation design. The void remaining after undercutting is typically filled with stone aggregate or concrete. Structural fill as described in Section 5.2 may also be used to replace undercut material.



5.4 Drilled Shaft Foundation – Tension Poles

The lateral loading governs the design of the pole foundations. The proposed shaft described in Section 2.0 was analyzed as completely rigid, rotating about some point along its length in passive pressure resistance to loading. The shaft head is also considered to be free headed as is the case here. This analysis is limited to cases where the amount of lateral movement is not a concern and generally provides conservative estimates of allowable capacity. The proposed shaft embedment depth of 10 feet is suitable for an applied shear force of 2 kips and overturning moment of 70 ft-kips.

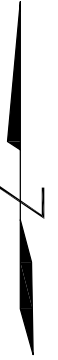
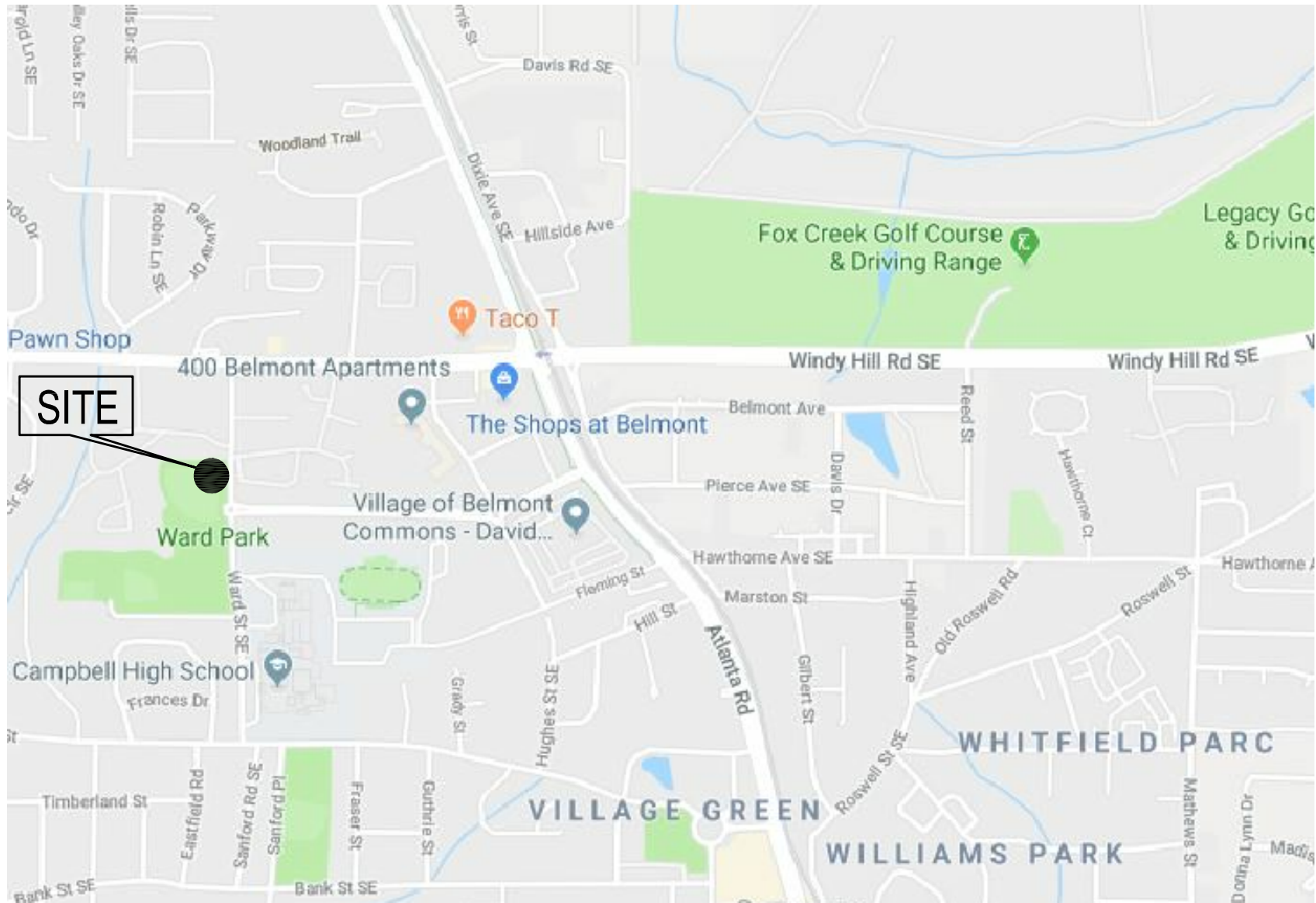
Only failure of the soil was considered due to lateral loading. No consideration was given to failure of the concrete or pole. Therefore, the allowable lateral capacity may be governed by the strength of the concrete and pole. The structural capacity of the proposed installation must be checked by a registered and qualified structural engineer.

6.0 QUALIFICATIONS OF RECOMMENDATIONS

This evaluation of the geotechnical aspects of the proposed design and construction has been based on our understanding of the project and the data obtained during this study. The general subsurface conditions used in our evaluation were based on interpolation of the subsurface data between the borings. Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions will differ between boring locations, that conditions are not as anticipated by the designers, or that the construction process has modified the soil conditions. Therefore, experienced soil engineers and technicians should evaluate earthwork and foundation construction to verify that the conditions anticipated in design exist. Otherwise, we assume no responsibility for construction compliance with the design concepts, specifications or recommendations.

The recommendations contained in this report have been developed based on the previously described project characteristics and subsurface conditions. If project criteria change, we should be permitted to determine if the recommendations should be modified. The findings of such a review will be presented in a supplemental report. Even after completion of a subsurface study, the nature and extent of variation between borings may not become evident until the course of construction. If such variations then become evident, it will be necessary to re-evaluate the recommendations of this report after on-site observations of the conditions. These professional services have been performed, the findings derived, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all warranties either expressed or implied. This company is not responsible for the conclusions, opinions or recommendations of others based on these data.

APPENDIX



REFERENCE GOOGLE MAPS



Corporate Environmental Risk Management

1990 Lakeside Parkway ♦ Suite 300 ♦
 Tucker GA 30084
 O: 678.999.0173 ♦
 F: 678.999.0186
www.cerm.com

VICINITY MAP

WARD PARK (LATTANZI FIELD)
 SMYRNA, GA

PROJ. NO.: 2018-1360-009

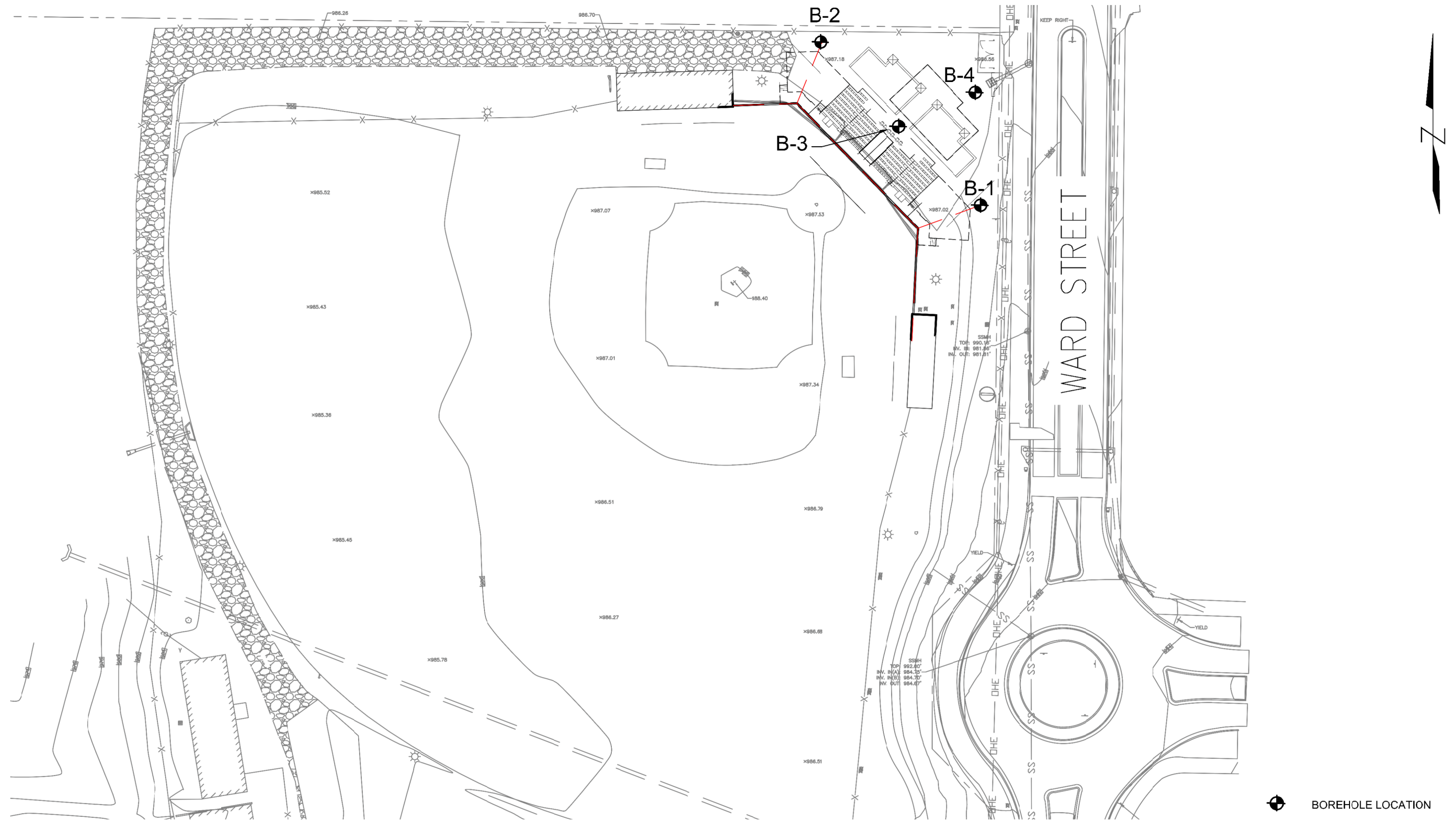
DRAWN BY: JLL

SCALE: NOT TO SCALE


DATE: 08/29/2018

FIGURE NO:

1



REFERENCE GOOGLE MAPS

 BOREHOLE LOCATION



Corporate Environmental Risk Management
 1990 Lakeside Parkway ♦ Suite 300 ♦ Tucker GA 30084
 O: 678.999.0173 ♦ F: 678.999.0186
www.cerm.com

BORING LOCATION PLAN

WARD PARK (LATTANZI FIELD)
 SMYRNA, GA

PROJ. NO.: 2018-1360-009
DRAWN BY: JLL
SCALE: NOT TO SCALE
DATE: 08/29/2018

FIGURE NO.:
 2

SOIL TEST BORING PROCEDURES (ASTM D 1586 and 1587)

The soil test borings were advanced by twisting continuous auger flights into the ground. At selected intervals, soil samples were obtained by driving a standard 1.4 inch I.D., 2.0 inch O.D., split tube sampler into the ground. The sampler was initially seated six inches to penetrate any loose cuttings created in the boring process. The sampler is then driven an additional 12 inches by blows of a 140-pound "hammer" falling 30 inches. The number of blows required to drive the sampler the final foot is designated the Standard Penetration Resistance.

Relatively undisturbed samples were secured using a three-inch diameter, thin-wall steel tube sampler. In this sampling procedure, the borehole is advanced to the desired level, and the tube is lowered to the bottom of the boring. It is then pushed about two feet into the undisturbed soil in one continuous stroke. The sample and tube is retrieved from the borehole and detached from the drill string.

The samples recovered were sealed against moisture loss and were transported to the office where they were classified by an engineer in general accordance with the Unified Soil Classification System (USCS).

**CORRELATION OF STANDARD PENETRATION RESISTANCE
WITH RELATIVE COMPACTNESS AND CONSISTENCY**

Sand and Gravel

Standard Penetration Resistance Blows / Foot -----	Relative Compactness -----
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
30 - 50	Dense
Over 50	Very Dense

Silt and Clay

Standard Penetration Resistance Blows / Foot -----	Relative Consistency -----
0 - 1	Very Soft
2 - 4	Soft
5 - 8	Firm
9 - 15	Stiff
16 - 30	Very Stiff
31 - 50	Hard
Over 50	Very Hard

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS	
			GRAPH	LETTER		
<p>COARSE GRAINED SOILS</p> <p>MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE</p>	<p>GRAVEL AND GRAVELLY SOILS</p> <p>MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE</p>	<p>CLEAN GRAVELS</p> <p>(LITTLE OR NO FINES)</p>		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		<p>GRAVELS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		<p>GRAVELS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES	
		<p>GRAVELS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES	
	<p>SAND AND SANDY SOILS</p> <p>MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE</p>	<p>CLEAN SANDS</p> <p>(LITTLE OR NO FINES)</p>		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
		<p>CLEAN SANDS</p> <p>(LITTLE OR NO FINES)</p>		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES	
		<p>SANDS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		SM	SILTY SANDS, SAND - SILT MIXTURES	
		<p>SANDS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		SC	CLAYEY SANDS, SAND - CLAY MIXTURES	
		<p>SILTS AND CLAYS</p> <p>LIQUID LIMIT LESS THAN 50</p>	<p>SILTS AND CLAYS</p> <p>LIQUID LIMIT LESS THAN 50</p>		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			<p>SILTS AND CLAYS</p> <p>LIQUID LIMIT LESS THAN 50</p>		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
<p>SILTS AND CLAYS</p> <p>LIQUID LIMIT GREATER THAN 50</p>	<p>SILTS AND CLAYS</p> <p>LIQUID LIMIT GREATER THAN 50</p>		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS		
			CH	INORGANIC CLAYS OF HIGH PLASTICITY		
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		
<p>ALLUVIUM</p>				PT	ALLUVIUM, PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	
<p>FILL</p>				FILL	MATERIAL PLACED BY MAN	

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SECTION 02 41 13

DEMOLITION

PART 1 - GENERAL

1.01 SUBMITTALS:

- A. Submit two copies of proposed methods and operations of demolition to the Architect for review prior to the start of work.

1.02 JOB CONDITIONS:

- A. The existing building or site area will be vacant. The work under this contract shall not interfere with the operation of occupied areas.
- B. Contractor shall visit the site and examine the actual existing conditions prior to submitting bid.
- C. Prior to beginning demolition work, the contractor shall coordinate with the owner to verify if the owner intends to salvage any portions of the existing building or site.
- D. During demolition, should asbestos or lead base paint be discovered, the contractor shall be responsible for the removal and disposal of asbestos and/or lead based paint. Removal and disposal shall be in accordance with Federal, State and local guidelines in regard to abatement. The contractor and the owner will negotiate and agree to the cost for such asbestos and/or lead base paint abatement and the cost of the construction will be adjusted accordingly.

1.03 EXPLOSIVES:

- A. The use of explosives will not be permitted.

1.04 TRAFFIC:

- A. Conduct demolition operations and the removal of debris and equipment to insure minimum interference with existing business operation.

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- B. Do not close or obstruct streets, walks or other occupied or used facilities without permission from the Architect and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways, if required.
- C. Provide necessary covered protections to insure the safe passage of persons around the area of demolition.

1.05 PROTECTION:

- A. Ensure protection of persons around the demolition area.
- B. Provide temporary shoring, bracing or support to prevent movement, settlement or collapse of structure during the demolition work.

PART 2 - PRODUCTS (Not required)

PART 3 - EXECUTION

3.01 DEMOLITION:

- A. Perform demolition work in accordance with the demolition schedule approved by the Owner.
- B. Use water sprinkling, temporary enclosures, and other suitable methods as necessary to limit the amount of dust and dirt rising and scattering in the air, to the lowest level.
- C. Locate demolition equipment to remove materials so as to not impose excessive loads to supporting walls, floors or framing.

3.02 DISPOSAL OF DEMOLISHED MATERIALS:

- A. General: Remove from the site as work progresses all debris, rubbish and other materials resulting from demolition operations.
- B. Care shall be taken in removal of the items to remain the Owner's property to prevent damage including trees and landscaping. Store items where directed by the Owner.

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All other materials removed by the demolition work and not indicated to be relocated or reused in the project shall become the property of the Contractor and removed from the site as work progresses; cross referenced paragraph 1.02C, this section.

- C. Salvageable Materials: Salvageable Materials shall become the property of the Contractor and shall be removed from the job site unless determined otherwise prior to beginning demolition work. Cross reference paragraph 1.02 C this Section.

3.03 DEMOLITION WORK:

- A. The demolition work shall include cutting, patching and removal of all existing portions of the building required to complete the contract. The demolition work in general includes, but is not limited to the following items:
1. All underground utilities, including sanitary sewer, storm sewer, natural gas, water service piping, electrical service. All utilities to be removed to property line and capped.
 2. All paving including concrete, asphalt or stone/brick.
 3. All landscaping as indicated as the civil engineering drawings.
 4. Existing structures entirely, including all foundations.

END OF SECTION

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SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

- A. The extent of concrete work is shown on the Drawings.

1.02 QUALITY ASSURANCE:

- A. Any material or operation specified by reference to the published specifications of a manufacturer, The American Society for Testing and Materials (ASTM), The American Concrete Institute (ACI), The Portland Cement Association (PCA), The Concrete Reinforcing Steel Institute (CRSI), the local building code, or other published standard, shall comply with the requirements of the current specification or standard listed. In case of conflict between the referenced specification and the project specifications, the project specifications shall govern. In case of conflicts between the reference specifications or standards, the one having the more stringent requirements shall govern.
- B. Comply with the provisions of the following codes:
1. ACI 301 "Specifications of Structural Concrete for Buildings."
 2. ACI 311 "Recommended Practice for Concrete Inspection."
 3. ACI 318 "Building Code Requirements for Reinforced Concrete."
 4. ACI 347 "Recommended Practice for Concrete Formwork."
 5. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete."
 6. ACI 305R-77 "Recommended Practice for Hot Weather Concreting."
 7. ACI 306R-78 "Recommended Practice for Cold Weather Concreting."
 8. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

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1.03 TESTING OF CONCRETE:

- A. Testing of concrete will be done under the direction of a laboratory approved by the Architect.

1.04 SUBMITTALS:

- A. Submit the following in accordance with Section 01 33 23 - Submittals.
- B. Manufacturers' Data - Submit:
 - 1. Mix designs for each type and class of concrete. Submittal shall include independent lab tests verifying the design strength in accordance with ACI 318 Chapter 4.
 - 2. Complete list of all items proposed for the work under this Section and sufficient data to demonstrate compliance with these specifications.
 - 3. Complete description of proposed during methods.
 - 4. Concrete cylinder test reports.
- C. Shop Drawings: Submit complete shop drawings of all materials proposed to be provided under this Section. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures." Include:
 - 1. Bar schedules, stirrup spacing, diagrams of bent bars, arrangement and assemblies.

PART 2 - PRODUCTS

2.01 FORM MATERIALS:

- A. Forms for Unexposed Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- B. Form Coatings: Provide commercially formulated form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and

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will not impair subsequent treatments of concrete surfaces to be cured with water or curing compound.

- C. Form Ties: Provide factory-fabricated, adjustable length, removable or snap-off metal form ties, designed to prevent deflection, and to prevent spalling concrete surfaces upon removal. Unless otherwise shown, provide ties so that portion remaining within concrete after removal of exterior parts is at least 1-1/2" from the outer concrete surface. Unless otherwise indicated, provide form ties which will leave a hole not larger than 1" diameter in the concrete surface.
 - 1. Form ties fabricated on the project site and wire ties are not permitted.

2.02 REINFORCING MATERIALS:

- A. Reinforcing Bar: ASTM A615, Grade 60.
- B. Welded Wire Fabric: ASTM A185, welded steel wire fabric.
- C. Metal Accessories: Include all spacers, chairs, bolsters, ties and other devices necessary for properly placing, spacing, supporting and fastening reinforcement in place. Conform to requirements of CRSI Manual of Standard Practice and ACI 315. All bearing or connection plates shall be securely anchored in the concrete by means of anchor rods. Wood, brick and other devices shall not be used.

2.03 CONCRETE MATERIALS:

- A. Portland Cement: ASTM C150, Type I or Type II.
- B. Normal Weight Aggregate: ASTM C-33 and as herein specified.
 - 1. Fine aggregate shall conform to ASTM C33.
 - 2. Coarse aggregate shall conform to ASTM C33, 3/4" maximum size.
- C. Water: Clean, fresh, drinkable.
- D. Design Strength:

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1. All structural concrete mix designs shall produce 28 day strengths of 3000 psi.
2. Concrete slab on grade mix designs shall produce 28 day strengths of 4000 psi.

2.04 ADMIXTURES:

- A. Set-Control Admixtures: ASTM C494, containing no more than 0.1% chloride ions, as follows:
 1. Water-reducing, retarding (Type D): Use in all concrete. Retarder shall be:
 - a) W.R. Grace and Company, "Daratard"
 - b) Master Builders Company, "Pozzolith 300-R"
 - c) Sika Chemical Company, "Plastiment"
 - d) Euclid Chemical Company, "Eucon Retarder 75"
 - e) or Approved Equal
- B. Air-Entraining Admixtures: ASTM C260, used for all concrete to remain exposed to weather in complete work.
 1. Air content shall be 5% +/- 1%. The air content shall be checked during the period of time that the required testing cylinders are being cast. The determination of air content shall be in accordance with ASTM C-231 and/or ASTM C-173 as determined by the Testing Laboratory.
 2. Air-entraining agent used shall be compatible with the retarder used. The combination shall be subject to the approval of the Architect. The Contractor may, at no extra cost to the Owner, use an admixture if desired, provided it meets with the approval of the Architect. The request shall state the reasons for using the admixture, the amounts and what type. The Contractor shall pay for the extra testing if required by the Architect in connection with using admixtures.
- C. Admixtures and ingredients used in concrete to be place on metal deck shall contain no compound or mixture that is injurious to the metal deck.

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2.05 CURING COMPOUNDS:

- A. Floor Hardener and Curing Compound: Aqueous solution of sodium silicate, or other suitable substance, with non-acid penetrating agent, STM C309-74, Type 1, reacting chemically with free lime in concrete to form a hard, non-dusting surface which will not inhibit bonding with future finishes. Compound shall be:
1. Euclid Chemical Company, "Eucosil"
 2. Sonneborn-Contech, "Sonocil"
 3. Master Builders, "Masterseal"
 4. or Approved Equal

2.06 CONTROL JOINTS:

- A. Control Joints (Slabs on Grade): Saw-cut 3/4" deep, or 24 gauge galvanized pre-shaped keyed type 1/2" less in depth than the slab. Joints shall be held in place with 1" x 1/8" ribbed stakes at 2'-0" o.c. on the female side. The male side of the joint shall be greased or sprayed with a bond breaker. Approved joints shall be as follows:
1. Burke Concrete Accessories, Inc.
 2. Jahn Concrete Forming Products
 3. Keyhold, Inc.
 4. or Approved Equal

2.07 RELATED MATERIALS:

- A. Use concrete-related items as indicated on the Drawings, if any, and as specified herein.
1. Bonding Agent: Film forming, freeze-thaw resistant compound suitable for brush or spray application complying with Mil-B-19235, similar to "Daraweld-C" by W.R. Grace or equal.
 2. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M182.
 3. Moisture-Retaining Cover: One of the following, complying with ASTM C171:
 - a. Waterproof Paper
 - b. Polyethylene Film

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- c. Polyethylene-Coated Burlap
- 4. Provide metal inserts for anchorage of materials or equipment to concrete construction, not supplied by other trades and as required for the work.

PART 3 - EXECUTION

3.01 PROPORTIONS:

- A. All concrete shall be proportioned by weight so as to give an ultimate compressive strength of 3000 P.S.I. at 28 days.
- B. The mix shall provide for a slump of 3" minimum, 5" maximum for concrete beams, columns or slabs.
- C. Water-reducing admix shall be provided in accordance with manufacturer's recommendations.
- D. Water shall be clean, free from oil, acid, vegetable matter, alkalies, or salts. The Contractor shall make all arrangements and connections for water supply. Obtain all permits and pay for all changes in connection with water supply for this work.
- E. All mix designs shall be submitted and approved prior to placement of any concrete.

3.02 MIXING:

- A. All materials shall be measured and mixed in a machine. Mixing and transporting shall meet ASTM C94. The materials shall first be mixed dry and the water then added by measurement.
- B. Mixing time shall begin when the water is added to the mix.
- C. Water shall not be added to the mix at the job site.

3.03 FORMS:

- A. The design and engineering of the formwork, as well as its construction shall be the responsibility of the Contractor. Except as specifically called for

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otherwise herein, all formwork shall meet the "ACI Standard Recommended Practice for Concrete Formwork (ACI 347)".

3.04 PREPARATION:

- A. Before placing concrete in any forms, clean all forms and remove all debris. Check all reinforcing to be sure that no reinforcing is touching the form or pan sides. Review all form surfaces to be in contact with concrete and remove from the job site any forms with surface imperfections.
- B. Before placing any concrete, determine that all work that is to be built into the concrete work is located and installed. All such items shall be so placed as not to interfere with the reinforcing steel.
- C. Soak all wood board forms with water just before the concrete is poured.
- D. Special measures shall be taken in both severe cold and hot weather and shall be in accordance with ACI Recommended Practice (ACI 306R-78 and ACI 305R-77).

3.05 PLACEMENT OF REINFORCING:

- A. The Contract Drawings shall take precedent over Contractor's shop drawings unless otherwise authorized. The contract drawings shall be referred to by the steel installer for details governing placing.
- B. Reinforcement shall be correct in length and size and bent in accordance with the Drawings. It must be located in forms and wired together, with clearance to provide concrete protection as noted herein.
- C. Splicing of reinforcing shall be as indicated on the Drawings.
- D. Concrete covering for reinforcing steel shall be in accordance with ACI 318.
- E. Lap wire mesh a minimum of 6" and wire together at

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both sides and end laps.

3.06 CASTING:

- A. No concrete shall be placed without a prior notice to the Architect. The Contractor shall give a minimum of 48 hours notice to the Architect prior to placement of concrete.
- B. Internal type mechanical vibrators and hand spading shall be used to consolidate the concrete and produce a dense concrete free from voids and honeycombs. Care shall be taken that vibration is not applied long enough to separate the ingredients.
- C. Not applicable
- D. Tolerance for grade or level shall be 1/4" (1/8" plus or minus from required grade in any 10'-0" radius circle) and not more than 3/4" total in building. Align new slabs with old slabs where slabs abut.

3.07 PROTECTION AND CORRECTIVE WORK:

- A. Workmen shall not walk on concrete during placing or finishing with any earth or foreign matter on footgear.
- B. Protect all freshly placed concrete from damage or injury due to water, falling objects, traffic or anything that might mar or injure the finish surface of the concrete. Any surfaces that are damaged shall be removed and replaced with fresh concrete at the expense of the Contractor.
- C. Care shall be taken in the removal of the forms not to damage the surface of the concrete. Immediately after the forms are removed, all damaged or imperfect work shall be patched. If, in the opinion of the Architect, the patching does not restore the work to the quality specified, the Contractor shall remove and rebuild the work at his expense.
- D. Where concrete work does not conform to these Specifications and where patching is not approved

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by the Architect or low strength concrete is not permitted to remain in place, procedures and plans covering all work to be rebuilt shall be submitted by the Contractor to the Architect before removal and rebuilding is begun. The cost of such plans as well as the cost of removal and rebuilding shall be at the Contractor's expense.

3.08 FINISH OF FORMED SURFACES:

- A. Rough Form Finish (for formed concrete surfaces not exposed to view in the finish work unless otherwise indicated): This is the concrete surface having the texture imparted by the form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.
- B. Smooth Form Finish (for formed concrete surfaces exposed to view, or that are to be covered with a coating material applied directly to the concrete, or a covering material bonded to the concrete, such as waterproofing, dampproofing, painting or other similar system, other than exposed concrete columns): After the forms have been removed, all concrete surfaces shall be inspected and any pour joints, voids, stone pockets, or other defective areas permitted by the Architect to be patched, and all tie holes, shall be patched before that concrete is thoroughly dry. Defective areas shall be chipped away to a depth of not less than one inch with the edges perpendicular to the surface. The area to be patched and a space at least 6 inches wide entirely surrounding it shall be wetted to prevent absorption of water from the patching mortar.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surface. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise shown.

3.09 SLAB FINISHES:

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- A. Not applicable

3.10 CURING OF CONCRETE:

- A. As soon as floors may be safely walked upon and before any work is done over them, all floors that are not recessed for other finishes shall be coated with a curing compound as specified herein.
- B. All floors that are not to receive floor coverings or other finishes or sealers shall receive a second application prior to final acceptance.
- C. Floors that are recessed for a finish material shall be covered with a moisture-retaining cover as specified herein.

3.11 CONCRETE SURFACE REPAIRS:

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, but only when acceptable to the Architect.
 - 1. 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.
- B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
- C. Repair Concealed Formed Surfaces: Where possible,

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that contain defects that adversely affect the durability of the concrete. If defects cannot be repaired, remove and replace the concrete.

- D. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs for smoothness and to verify tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for tureness of slope, in addition to smoothness, using a template having required slope.
 - 1. Repair finished unformed surfaces that contain defects which adversely affect durability of concrete. Surface defects include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectional conditions.
 - 2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
 - 3. Correct low area in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. (Proprietary patching compounds may be used when acceptable to Architect.)

- E. Formwork or Shoring Removal: Is based on the concrete reaching its specified 28 days strength (or a specified percentage thereof). The concrete shall be presumed to have reached this strength when test cylinders, field cured under the most unfavorable conditions prevailing for the portion of the concrete represented, have reached the required strength.

3.13 MISCELLANEOUS CONCRETE ITEMS:

- A. Provide concrete grout at masonry construction where indicated on the Drawings and as scheduled.

- B. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after

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work of other trades is in place. Mix, place, and cure concrete, as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete the work.

END OF SECTION

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SECTION 04 05 13

MORTAR AND GROUT

PART 1 - GENERAL

1.01 QUALITY CRITERIA:

- A. For each type of cement specified, only one brand shall be used throughout project.
- B. Standards of the American Society for Testing and Materials (ASTM), as referenced herein.

1.02 SUBMITTALS:

- A. General: Submit in accordance with Section 01 33 23 - Submittals.
- B. Product Data: Submit manufacturer's product specifications, test data, mixing and installation instructions for each manufactured product.

1.03 DELIVERY, STORAGE AND HANDLING:

- A. Deliver materials, except aggregate, in original unopened containers displaying product name, type and grade and mixing instructions.
- B. Store materials to prevent inclusion of foreign materials. Store cement, lime and admixtures above ground level and covered for protection from moisture and contamination.
- C. Stock pile and handle aggregates to prevent contamination from foreign materials.
- D. No anti-freeze liquid, salts or other substances shall be used in the mortar to lower the freezing point until cured.
- E. Protect mortar and grout from freezing until cured.

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PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Portland Cement: Meeting ASTM C150-86, Type I, natural color, non-staining, domestic manufacturer.
- B. Masonry Cement:
 - 1. For natural color mortar: ASTM C91, Type II, non-staining, 22% maximum air content by volume and proportioned to comply with requirements of ASTM-82 for Type S mortar.
 - 2. For grout: ASTM C404
- C. Hydrate Lime: ASTM C-207, Type S.
- D. Aggregate:
 - 1. For mortar: clean, hard, natural, washed, white sand meeting ASTM C144-87; except as recommended by manufacturer for colored mortar.
- E. Water reducing and plasticizing admixture; acceptable products:
 - 1. Lambert Corp. - Mortartite.
 - 2. Master Builders Co. - Omicron Mortarproofing.
 - 3. Sonneborn Div. of Contech, Inc. - Hydrocide.
- F. Non-Shrink Grout: characteristics: high flow, non-metallic, controlled expansive type grout. Acceptable Products:
 - 1. Gillford-Hill and Co. - Supreme
 - 2. Master Builder Co. - Master Flow 713
 - 3. Sonneborn Building Products - Sonogrout
 - 4. W.R. Meadows, Inc. - 588
- G. Water: Clean, potable, free from deleterious amounts of alkalies, acids and organic materials.

2.02 PROPORTIONS:

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- A. Type "S" Job-Mixed or Bag-Mixed Mortar: Proportion materials by volume in accordance with ASTM C270-88 as follows:
 - 1. One part masonry cement to 1/2 part Portland cement to aggregate proportioned at not less than 2-1/4 nor more than three times the combined volume of cements used, or;
 - 2. One part Portland cement and 1/4 to 1/2 parts hydrated lime to aggregate proportioned at not less than 2-1/4 nor more than three times the combined volume of cement and lime used.
 - 3. One part pre-mixed Type S masonry cement to aggregate proportioned not less than 2-1/4 not more than three times the volume of masonry cement used, and as directed by masonry cement manufacturer's product data to produce Type S mortar.

- B. Non-Shrink Grout: Mix prepared non-shrink grout product with water as directed by manufacturer's product data to achieve a minimum compressive strength of 7000 psi at 28 days.

PART 3 - EXECUTION

3.01 MIXING:

- A. Mix mortar in power-driven, drum type mixers. Operate mixer minimum of five minutes after addition of all materials.

- B. Admixtures:
 - 1. For job-mixed mortars add water reducing and plasticizing admixtures in accordance with admixture manufacturer's product data.
 - 2. Addition of other admixtures, including anti-freeze ingredients, will not be permitted.
 - 3. Do not use calcium chloride in mortar or grout.

- C. Measure cement and aggregate materials for job mixed mortars in one cubic foot container. Do not measure by shovels.

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- D. Completely empty drum before recharging for next batch.
- E. Discard grout not placed within 1-1/2 hours after water is added to mix, or sooner as indicated by the grout manufacturer.
- F. Environmental Conditions:
 - 1. Heat mixing water when air temperature is below 40 degrees F and heat aggregates when air temperature is below 32 degrees F to assure mortar temperatures between 40 degrees F and 120 degrees F until used.
 - 2. Do not heat water or sand above 120 degrees F.

3.02 PLACING MORTAR AND GROUT:

- A. Use Type S mortar for all exterior and interior masonry.
- B. Place standard mortar at concrete unit masonry.
- C. Place grout where reinforced masonry is indicated. Do not expose in the finished work.

3.03 SCHEDULE:

- A. Mortar and grout shall not be prepared more than 30 minutes from delivery to point of use, and no mortar shall be used after 1-1/2 hours from initial mixing. Retempering is not permitted and no mortar shall be used in which setting has stated.

END OF SECTION

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SECTION 04 05 19

MASONRY ACCESSORIES

PART 1 - GENERAL

1.01 SUBMITTALS:

- A. General: Submit in accordance with Section 01 33 23 - Submittals.
- B. Submit manufacturer's product data marked to indicate only items proposed for use in project and installation instructions.

PART 2 - PRODUCTS

2.01 MASONRY JOINT REINFORCEMENT:

- A. Acceptable Manufacturers:
 - 1. AA Wire Products Co.
 - 2. Dur-O-Wal, Inc.
 - 3. Jim Taylor, Inc.
 - 4. Masonry Reinforcing Corporation.
- B. Masonry Joint Reinforcement; Ladder Type:
 - 1. Fabricate from cold-drawn wire meeting ASTM A82-85.
 - 2. Longitudinal rods 9 gauge deformed wires with 9 gauge galvanized cross wires welded to form ladder pattern.
 - 3. Width of reinforcement shall be 2" less than total wall width.
 - 4. Provide reinforcement in 10'-0" lengths with prefabricated corners and tees at intersecting walls, of same design and finish as joint reinforcement.
 - 5. Cavity wall masonry joint reinforcing to be D/A 340 CRT or D/A 320 TR TRI-ROD by Dur-O-Wal, Inc. Equal products by other acceptable manufacturers may be furnished.

Masonry Accessories

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6. Single wythe masonry joint reinforcing to be D/A 310 TRUSS by Dur-O-Wal, Inc. Equal products by other manufacturers may be furnished.
 7. Protective Coatings:
 - a. Coatings for reinforcement fully embedded in mortar at single wythe construction shall comply with ASTM A641-82, Class 3.
 8. Prefabricated Corners and Tees: Provide prefabricated corners at all inside and outside corners and prefabricated tees at all locations where CMU walls abut perpendicular.
- C. Anchor construction: All anchors and reinforcement shall be made with wire conforming to the ASTM A82 for Hard Tempered wire. All plates and bar anchor material shall conform to ASTM A36.

2.02 MISCELLANEOUS MASONRY ACCESSORIES:

- A. Preformed Control-Joint Gaskets: Provide preformed PVC control-joint gaskets at expansion joints. PVC material shall conform to ASTM D2287 type PVC 654-4 with a durometer of hardness of 85+/-5 when tested in accordance with ASTM D2240.
- B. Wire mesh hardware cloth: Type; ½" x 16 ga. Galvanized steel mesh, 2" less than wall width.
- C. Weeps: Provide clear plastic weeps 3/8" O.D. x 4" long.

PART 3 - EXECUTION**3.01 INSTALLATION:**

- A. Install masonry joint reinforcement in masonry walls at 1'-4" o.c. vertically. Lap side rods 6" minimum at splices. Stop reinforcement 1" back from expansion and control joints and openings in

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masonry walls. Install reinforcement in first and second bed joint above and below openings, with non-continuous reinforcement extending 2'-0" beyond jamb, each side.

- B. Install rubber control joints as specified in the Concrete Unit Masonry section.
- C. Install wire mesh hardware cloth to prevent migration of grout from masonry units indicated to be grouted.

END OF SECTION

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SECTION 04 21 13

BRICK MASONRY

PART 1 - GENERAL

1.01 SUBMITTALS:

- A. General: Submit in accordance with Section 01 33 23 - Submittals.
- B. Product Data: Submit manufacturer's product data, mixing and application procedures for masonry cleaning compound.
- C. Samples: Face brick in the form of strips of five or more bricks.

1.02 PROJECT CONDITIONS:

- A. Environmental Requirements:
 - 1. Lay no masonry when temperature of surrounding air has dropped below 45°F., unless it is rising; and at no time when temperature has dropped below 40°F., except by written permission from Architect.
 - 2. When masonry work is authorized during temperature below 40°F., but above freezing, mortar shall be provided at temperature between 70° and 100°F.
 - 3. Maintain air temperature above 40°F. on both sides of masonry for at least 72 hours after laying.
 - 4. Comply with the requirements of the governing code and with the "Construction and Protection Recommendations for Cold Weather Masonry Construction" of the Technical Notes on Brick and Tile Construction by the Brick Institute of America.
- B. Protection of Work:
 - 1. During erection, keep walls dry by covering at end of each shutdown period with a waterproof membrane, anchored and overhanging each side

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- of wall at least 2'-0".
2. Remove misplaced mortar or grout immediately.
 3. Protect face materials against staining.
 4. Protect sills, ledges and offsets from mortar droppings during construction.

1.03 SEQUENCING AND SCHEDULING:

- A. Do not enclose or cover mechanical or electrical work requiring inspection until such work has been accepted. Coordinate this work with work of other sections required to be built into masonry construction.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver brick masonry materials dry and store off ground, under cover.

1.05 QUALITY ASSURANCE:

- A. Job Mock-Up: At a location selected by the Architect, lay up a sample wall panel of each type face brick using mortar as specified in another section. Panel shall be 4'-0" high x 6'-0" wide with one 90° corner. Prepare panel at least 14 days prior to beginning masonry work. Should panel be disapproved, prepare additional panels until approved by Architect. Panels shall be maintained until completion of the work as a standard for masonry work. Install sample control joint in job mock-up. Upon completion of the masonry work and with the approval of the architect, the job mock-up shall be demolished and removed from the site.

PART 2 - PRODUCTS

2.01 FACE BRICK:

- A. Brick Allowance: Include an allowance of \$385.00 per thousand, for the purchase of face brick. The allowance shall include material, local and state sales taxes. If the final cost of the face brick is greater than the allowance, the Owner will pay the difference. If the final cost of the face brick is less than the allowance, the Owner will receive a

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credit for the difference.

- B. Meeting ASTM C216-86b, Grade SW, Type FBA, units.
- C. Dimensions: Modular size, 2-1/4" x 3-5/8" x 7-5/8".
- D. Color and Texture: To be selected by Architect.
- E. Weeps: 3/8" clear plastic weeps.
- F. Brick allowance based on color options selected at Cherokee Brick & Tile Company, Macon, GA.
Contact: Pate Rowell- 404-925-9247

2.02 MASONRY CLEANING COMPOUND:

- A. Type: Non-Acid Based Cleaner: Manufacturers' standard non-acidic new masonry cleaner composed of organic salts.
 - 1. SOS 50 manufactured by EaCo Chem, Inc.
 - 2. Price Non-Acid Masonry Cleaner

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Workmanship: Install no cracked, broken or chipped units exceeding allowances, stated in the ASTM referenced.
 - 1. Use abrasive power saws to cut bricks. Avoid slivers less than 2" wide.
 - 2. Lay brick plumb, true to line and with level courses, spaced within allowable tolerances specified.
 - 3. Do not furrow bed joints.
 - 4. Stop off horizontal runs by racking back in each course; toothing is not permitted.
 - 5. Adjust units to final position while mortar is soft and plastic.
 - 6. If units are displaced after mortar has stiffened, remove units, clean joints and units of mortar and relay with fresh mortar.
 - 7. Cutting and patching of finish masonry to

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accommodate work of other trades shall be done so as not to mar appearance of finished surface.

8. Adjust shelf angles to keep work level and at proper elevation.
9. Provide pressure relieving joints by placing continuous 1/8" foam neoprene pad under shelf angle.
10. When joining fresh masonry to set or partially set masonry, remove loose brick and mortar and clean and dampen exposed surface of set masonry prior to laying fresh masonry.
11. Mix units from various pallets to insure uniform color and texture throughout work.

B. Mortar Beds:

1. Lay brick with full mortar coverage on horizontal and vertical joints in all courses.
2. Provide sufficient mortar on ends of brick to fill head joints.
3. Rock closures into place with head joints thrown against two adjacent bricks in place.
4. Do not pound corners or jambs to fit stretcher units after setting in place.
5. Where adjustment to corners or jambs must be made after mortar has started to set, remove mortar and replace with fresh mortar.

C. Mortar Joints:

1. Normal thickness: 3/8".
2. Tool joints exposed in finished work when "thumb-print" hard. Joints shall be tooled concave using a jointer at least 2'-0" in length.
3. Trowel joint or concave tool joints below grade.

D. Bonding Pattern: Lay brick in common running bond.

E. Control Joints: Keep clean of mortar and debris. Make joints 3/8" wide. Install PVC control-joint gasket in control joints where indicated. Caulk in accordance with Sealants section.

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1. Control joint installation ration shall be 3/1 (length/height) but spacing shall not exceed 50 feet horizontally.
2. Install control joint at intersecting walls.
3. Install control joint at changes in wall height.
4. Install control joint at changes in wall thickness.
5. Install control joint at openings; both sides if opening is greater than 6'-0".

G. Flashing:

1. Clean surface of masonry smooth and free from projections which might puncture flashing material.

H. Weep Holes:

1. Provide weep holes in exterior wythe of masonry at 2'-0" o.c. maximum, horizontally at heads and sills of openings, in exterior walls at grade, and in other locations where flashing is indicated.
2. Keep weep holes and area above flashing free of mortar droppings.

- I. Sealant Joints: Retain 1/2" deep by 1/4" wide sealant joint around outside perimeter of exterior doors, window frames and other wall openings.

- J. Pointing: Cut out defective mortar joints and holes in exposed work. Repoint with new mortar.

- K. Dry Cleaning: Brush brick surfaces with stiff bristle brush to remove mortar droppings. Do not allow mortar droppings to harden on exposed surfaces.

3.03 FINAL CLEANING:

- A. No wet cleaning shall take place within seven days of placing masonry.

- B. At least two hours prior to application of cleaning solution to brick work, saturate mortar joints with clean water and flush off loose debris.

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- C. Thoroughly wet walls before applying cleaning solution and thoroughly rinse walls after cleaning.
- D. Begin cleaning process at highest point of wall, working downward. Work in areas of 20 sq. ft. maximum. Flush wall as cleaning progresses to prevent accumulation of scum.
- E. Discard solutions containing debris and residue in a manner not to contaminate adjacent areas.
- F. Do not use high pressure to apply cleaning solution.
- G. Do not scrub mortar joints with cleaning solution.
- H. Protect materials adjacent to brick work subject to corrosion from contact with cleaning solution.
- I. Apply manufactured cleaning compound to brick masonry as tested on job mock-up in accordance with manufacturer's product data. Flush with clean water.
- J. Remove paint stains, welding stains and stains caused by related work in accordance with recommendations of the Brick Institute of America. "Technical Notes #20", dated Nov. 1990 (Re-issued March 2000). Apply cleaning agents only after testing on sample panel.

3.04 ALLOWABLE TOLERANCES:

- A. In lines and surfaces of walls and arrises:
 - 1. In lines and surfaces of walls and arrises:
 - a. 1/4" in 10'-0".
 - b. 3/8" in any story or 20'-0" maximum.
 - c. 1/2" in 40'-0" or more.
 - 2. For external corners, expansion joints and other conspicuous lines:
 - a. 1/4" in any story or 20'-0" maximum.
 - b. 3/8" in 40'-0" or more.

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- B. Maximum variation from level or grades for exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines:
1. 1/4" in any bay of 20'-0".
 2. 1/2" in 40'-0" or more.
- C. Maximum variation of linear building line from established position in plan and related columns, walls and partitions:
1. 1/2" in any bay or 20'-0".
 2. 3/4" in 40'-0" or more.
- D. Maximum Variation in Cross-sectional Thicknesses:
Not less than 1/4" smaller nor more than 1/2" larger than indicated.

END OF SECTION

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SECTION 04 22 00

CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.01 SUBMITTALS:

- A. General: Submit in accordance with Section 01 33 23 - Submittals.
- B. Product Data: Submit manufacturer's product data for each type of masonry unit and other manufacturer's products, including certifications that each type complies with specified requirements.

1.02 DELIVERY, STORAGE AND HANDLING:

- A. Masonry Units:
 - 1. Store materials above ground and under cover in a dry place and to prevent damage or intrusion of foreign matter.
 - 2. Keep units dry. Allow air circulation around stacked units.
 - 3. Remove concrete units which have become wet from site.
 - 4. Protect units to be exposed in finish work from staining and physical damage of exposed faces.

1.03 PROJECT CONDITIONS:

- A. Environmental Requirements:
 - 1. Lay no masonry when temperature of surrounding air has dropped below 45° F., except with written permission from Architect.
 - 2. When masonry work is authorized at temperatures below 40° F., but above freezing, provide mortar at temperature between 70° and 100° F. Maintain air temperature above 40° F. on both sides of masonry for 72 hours after laying.

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3. Protect masonry construction from direct exposure to wind and sun when erected in ambient air temperatures of 95° F. in the shade with relative humidity less than 50%.

B. Protection of Work:

1. Keep walls dry during erection by covering at end of each work period with a waterproof membrane. Similarly protect partially completed walls not being worked on. Covering shall overhang at least 2'-0" on each side of wall.
2. Protect finished exposed work from stains.
3. Mortar droppings that stick to unit faces shall be allowed to dry, and then removed with trowel and surface lightly scrubbed with bristled brush.
4. Particular care shall be given to keeping masonry units clean in areas not to be painted.

C. Coordinate installation of masonry anchors with structural system to which masonry is attached.

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS:

- A. See structural drawings.

2.02 Not Applicable

2.03 ACCESSORY PRODUCTS:

A. Masonry Cleaning Compound:

1. Acceptable Products:
 - a. Hallmark Chemical Corp. - DC-6.
 - b. National Chemsearch Corp. - Deox.
 - c. Process Solvent Co. - Sure Kleen 600.
2. Type: Inorganic acid.

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PART 3 - EXECUTION

3.01 WORKMANSHIP:

- A. Lay only dry masonry units.
- B. Lay masonry plumb, level and true to line with accurate coursing as indicated on the drawings.
- C. Lay units in running bond with head joints centered in alternate courses.
- D. Cutting of masonry shall be done with abrasive power saw only. Lay out work to minimize cutting. Breaking or chisel sizing masonry is not acceptable.

3.02 BUILDING IN OF OTHER WORK:

- A. Build in work of other trades indicated to be built in with masonry, including anchors, wall plugs, expansion joints and accessories, as erection progresses. Space and align built-in parts and exercise care not to displace other materials from position. Fill in spaces around built-in items with cement grout.
- B. Fill hollow metal frames in masonry walls with cement grout as wall is laid. Rake back 1/2" joint between hollow metal frame and adjacent masonry to receive sealant.
- C. Lay masonry to receive flashing with smooth joints free from projections which might puncture flashing materials. Provide mortar on both sides of flashing in masonry joints.
- D. Unless indicated otherwise, provide minimum 8" of solid end bearing full height of wall from floor to bearing points for lintels, beams and other load-supporting members by either solid block or filling cores with cement grout.
- E. Provide lintels and bond beams where indicated using lintel blocks laid with joints matching

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adjacent work. Reinforcement shall be as indicated and block filled with concrete.

- F. Where indicated, reinforce vertical concrete block cells, grouting solid. Reinforcement shall be as specified in Division 3.

3.03 MORTAR JOINTS:

- A. Bed joints, unreinforced partitions:
 - 1. Lay first course in full bed of mortar.
 - 2. On all other bed joints, apply mortar on face shell only of masonry unit already laid.
 - 3. On masonry unit to be laid, apply a beveled buttering to face shell to insure full bed joints.
- B. Bed Joints, Reinforced and Fire-rated Partitions:
Lay all courses in full bed of mortar.
- C. Head Joints: Apply mortar to vertical face shells on both the masonry unit already laid and the unit to be laid to insure full head joint.
- D. Place masonry unit by rolling it to a vertical position and shoving it against adjacent unit, achieving position and alignment with minimum of adjustment.
- E. Adjustment shall be made only while mortar is still soft and plastic by tapping to plumb and bringing to alignment.
- F. Check unit laid with mason's level for level and for plumbness with wall below.
- G. Where adjustment must be made after mortar has started to harden, remove and replace mortar with fresh mortar.
- H. Keep bed and head joints uniform in width, except for minor variations required to maintain bond and locate returns. Standard thickness for both horizontal and vertical mortar joints shall be 3/8".
- I. Mortar shall not protrude into spaces designed to

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be filled with grout.

3.04 CONTROL JOINTS:

- A. Make joint 3/8" wide, unless otherwise indicated.
- B. Stop horizontal joint reinforcement 1" from control joint.
- C. Build PVC control joints into masonry using sash block to secure shear flange of joint filler.
- D. Keep joint clean of debris and mortar.
- E. Provide joints:
 - 1. In running walls spaced not more than 37'-4" o.c.
 - 2. At intersecting walls, either of which is more than 10'-0" long.
 - 3. At intersections with concrete walls.
 - 4. At joint between masonry and structural slabs, columns, beams or decks.
- F. Leave joint open and clean for caulking in accordance with Sealants section.

3.05 JOINT TREATMENT:

- A. Flush Joints: Strike joints flush in masonry to receive finish work of trades other than painting.
- B. Tooled Joints: Strike exposed joints in standard masonry units flush and, when partially set, tool using concave tool.

3.06 CLEANING AND POINTING:

- A. Keep masonry work free of mortar droppings as work progresses and, at completion of work, rub masonry to remove excess mortar.
- B. Point Mortar Joints: Remove and replace units with excessive spalls or chips.

3.07 FIELD QUALITY ASSURANCE:

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A. Allowable Tolerances:

1. Maximum variation from plumb: 1/4" in 10'-0",
not exceeding 3/8" in 20'-0".
2. Maximum variation from level: 1/4" in 20'-0",
not exceeding 1/2" in 40'-0" or more.
3. Maximum variation in linear building line from
location indicated:
1/2" in 20'-0".

END OF SECTION