

**PROJECT MANUAL
&
SPECIFICATIONS**

**STADIUM / CONCESSIONS &
PUBLIC CONVENIENCE BUILDINGS
BURT GILLETTE PARK
WILSON, NORTH CAROLINA**

5/10/08

**HOOD / HERRING
ARCHITECTURE
PLLP**

213 EAST NASH STREET
POST OFFICE BOX 2703
WILSON, NORTH CAROLINA 27893
TELEPHONE 252-399-2700
FACSIMILE 252-399-2701

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SECTION 01000
INSTRUCTIONS TO BIDDERS

A. PROPOSALS

1. Sealed proposals in conformity with proposal form bound herein executed by a duly authorized officer of the bidder will be received by

*John C. Hood, AIA for David Lee
Parks and Recreation Department
1800 Herring Avenue
Wilson, NC 27893*

Bids will be received until 3:00 PM , Thursday, May 29.

2. All Contractors are hereby notified that they must have proper license under the state laws governing their respective trades.

B. GENERAL PROJECT DESCRIPTION

1. This Project refers to the construction of a new 2 story, 1775 square foot field house with concrete slab, wood stud framing, wood trusses, concrete masonry exterior finish and includes site preparation and landscaping.

C. OBLIGATION OF BIDDER

1. At the time of the opening of bids, each bidder shall have inspected the site and shall have read and be thoroughly familiar with the plans and specifications (including all addenda). The failure or omission shall in no way relieve the bidder from any obligation with respect to his bid.

D. INTERPRETATIONS

1. Any person submitting a bid for the proposed contract having doubts as to the true meaning of any part of these proposed contract documents may submit to the Architect a written request for any interpretation thereof. The person submitting the request will be responsible for its prompt and actual delivery. An interpretation of such documents will be mailed to each person having received a set of such documents. The Owner shall not be responsible for any other interpretations or explanations of such documents which anyone presumes to make on behalf of the Owner before the time set for the receipt of bids. Bidders shall act promptly and allow sufficient time for a reply to reach them before the submission of their bids.

E. OWNERS

Where the term "Owners" is used in the specifications and accompanying documents, same refers to City of Wilson, Wilson, NC.

F. SITE LOCATION

The project site is located at Burt Gillette Park, Wilson, NC.

G. REQUESTS FOR PAYMENT

1. All requests for payment by Contractors shall be submitted on AIA Document G702 and G702A, Application and Certificate for Payment. This form may be purchased from: Publishing Department, American Institute of Architects, 1735 New York Avenue, N.W, Washington, DC 20006.

H. NOTICE OF SPECIAL CONDITIONS

Prospective bidders are hereby notified to direct their attention to particular parts of the contract documents and specifications which deal with the following:

1. Insurance Requirements
2. Special Conditions
3. Job Meetings

END OF SECTION

**PROPOSAL
FOR
STADIUM, CONCESSIONS & PUBLIC CONVENIENCE BUILDINGS
BURT GILLETTE PARK
WILSON, NC**

**TO: PARKS AND RECREATION DEPARTMENT
CITY OF WILSON
WILSON, NC**

Date: _____

The undersigned, as Bidder hereby declares, that the only person or persons interested in the proposal as principal or principals is or are named herein and that no other person has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company, or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the plans and specifications for the work and has read all special provisions furnished prior to opening of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees, if this proposal is accepted, to contract with the City of Wilson, Wilson, NC in the form of contract specified; to furnish all necessary labor, materials, equipment, machinery, tools, apparatus, means of transportation, and storage necessary to complete the General Contract (to include Plumbing, Mechanical, & Electrical) in full and complete accordance with the requirements of the plans, specifications, and contract documents.

BASE BID: _____ **DOLLARS (\$** _____ **).**

ADDENDUM RECEIPT: The receipt of the following addenda to the contract documents is acknowledged:

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Signed: _____

By: _____

License No. _____

Date: _____

**SECTION 01003
SPECIAL CONDITIONS**

A. AMENDMENTS TO GENERAL CONDITIONS

1. In accordance with Article 11 of the General Conditions, the Contractor shall furnish the following insurance and bonds. Certificates of the Contractor's insurance shall be filed with the Owner or Architect.
 - a. Workmen's Compensation as required by law. Same shall be provided to adequately protect all employees engaged on the site of the project. In case work is sublet, the Contractor shall require insurance to protect subcontractor's employees, unless same are fully covered by protection afforded by the Contractor. In case any class of employees are engaged in hazardous work under this contract, and are not covered by the Workmen's Compensation Statute, Contractor shall provide adequate protection of employees not otherwise protected.
 - b. Public Liability in the amount of not less than one million dollars (\$1,000,000) for injury to one person. The limit for injury to two or more persons in any one accident shall be three million dollars (\$3,000,000), to include automobiles and trucks.
 - c. Property Damage in the amount of not less than one million dollars (\$1,000,000) to include automobiles and trucks.
 - d. The Contractor shall furnish Builder's Risk Insurance for 100% of the contract amount to include extended coverage, fire insurance, malicious mischief and vandalism. Policy shall include the interests of the Owner and the Contractor in the work.
 - e. Performance and Payment Bonds:
 1. The Contractor shall furnish a Payment Bond in the amount of one hundred per cent (100%) of the contract sum.
 2. The Contractor shall furnish a Performance Bond in the amount of one hundred per cent (100%) of the contract sum. Bond shall remain in full force and effect for twelve months after the completion and acceptance of the work.

B. DATING & SUBMISSION OF BONDS & INSURANCE

1. All bonds, Power of Attorney and insurance certificates shall be tendered in three (3) copies. Power of Attorney and Builder's Risk policy shall be dated the same as the contract.
2. All bonds, contracts, etc. shall be stamped or embossed with the corporate seal, if applicable, of Contractors and firms that are incorporated.

C. CERTIFICATES OF INSPECTION

Upon completion of General Construction, also in the case of each Plumbing, Mechanical, Electrical, and/or other system, the Contractor shall obtain and deliver to the Owner or Architect, official certificates of occupancy and final inspection and acceptance in triplicate by the authority having jurisdiction.

D. LIEN WAIVER RELEASE

Upon completion of the project, all prime Contractors shall deliver to the Architect, four copies of a lien waiver release utilizing AIA forms listed below stating that all bills for materials and labor for the project have been paid. This shall be a notarized document. AIA Form G-707 and G-706 shall be used.

E. EXAMINATION OF SITE & PREMISES

All bidders submitting proposals shall visit the project site and observe and take into consideration all such conditions as may affect the work under this contract. No consideration shall be given to any claim for extra compensation or extension of contract time because of failure to comply with this provision.

F. FORM OF CONTRACT

Standard AIA Contract Form between Owner and Contractor shall be used. A101, 1987, Fourteenth Edition.

G. EQUAL CLAUSE

In order to establish a basis of quality, certain particular processes, types of equipment, or kinds of materials are specified by designating a particular manufacturer's name, brand, or number. It is not necessarily the intent of the specifications to exclude other processes, equipment, or materials that measure up to the standards of those specified. Should the Contractor desire to make substitutions, he shall first secure the written approval of the Architect.

H. GUARANTEE

The Contractor shall guarantee all workmanship and materials under any of the various contracts for a period of twelve months after the completion and acceptance of the work. Any defects in materials or workmanship shall be corrected by the Contractor during this period.

I. TEMPORARY STRUCTURES

The General Contractor shall erect a temporary field office complete with lights, telephone, and heat in cold weather.

J. WATER FOR CONSTRUCTION

The General Contractor shall provide water for construction and shall pay charges for complete cost of same, including minimum charges after water tap has been made.

K. TEMPORARY HEAT

The General Contractor shall provide temporary heat in the new construction to protect building materials and to perform work in cold weather as directed by the Architect. Cost for temporary heat shall be borne by the General Contractor and in no case be the responsibility of the Owner.

L. TEMPORARY LIGHTS & ELECTRIC SERVICE

The General Contractor shall provide electric service, install meter, etc. and pay for all power used on the project.

M. SANITARY FACILITIES

The General Contractor shall provide temporary toilet facilities, in accordance with governing laws.

N. CLEANUP

The Contractor shall remove all rubbish, excess material, etc. from the site at least once a week, and upon completion, leave the site clean and the building "Broom Clean".

O. LIST OF SUBCONTRACTORS, PROGRESS SCHEDULES & REQUESTS FOR PAYMENT

1. The General Contractor shall, immediately after execution of the contract, prepare and furnish, to the Architect, on his letterhead the following:
 - a. A progress schedule;
 - b. A list of subcontractors;
 - c. A complete breakdown of the contract price (Schedule of Values).These items when approved and accepted by the Architect will be used as a basis for authorizing payments to the Contractor in accordance with Articles 4 and 9 to the General Conditions (14th Edition, 1987).
2. The values employed in making up the breakdown are for the purpose of making partial payments and shall not be taken as a basis for additions and deductions from the contract price. The progress schedule of the prime Contractors shall be coordinated; consolidated by the General Contractor, and approved by the Architect. **The General Contractor shall be the project expeditor and shall coordinate and consolidate all progress schedules into one master schedule. As project expeditor, the General Contractor shall coordinate the work of all prime contractors and subcontractors.**
3. Upon approval of the breakdown, the Contractor shall, without delay, submit for approval by the Architect a carefully considered master progress schedule showing dates of starting and completion of each of the various branches of the work and the accumulated percent of progress each month. Monthly requests for payment will not be processed for payment until the master progress schedule has been approved by the Architect.
4. At the time of submission of progress schedule, the General Contractor shall also file his general "Plan of Operations" showing precisely the manner in which he proposes to carry out his work on the site. This Plan of Operations shall take into consideration the work of all subcontractors. This plan will indicate the point of entrance, the course he intends to pursue, the sequence of operations, and such other general information as may be required for approval by the Architect.
5. Requests for payment by all contractors shall be submitted on AIA Document "G702" Application and Certificate for Payment", May 1983 Edition. These forms may be purchased from the Publishing Department, The American Institute of Architects, 1735 New York Avenue, N.W., Washington, DC 20006.

P. JOB MEETINGS

Weekly meetings arranged by the General Contractor shall be held at the job site with a principle of each subcontractor present. The Architect may or may not be present at these meetings. The purpose of these meeting shall be

to discuss, plan and execute job progress in relation to the progress schedule, purchasing and delivery of materials, shop drawings, and other pertinent items. The General Contractor shall submit a written report of the meeting to the Architect. State in the report of the weekly progress meeting what provisions will be made when work is behind schedule.

Q. SAFETY PROGRAMS

Each Contractor shall maintain and promote a safety program for all employees in accordance with the NC State Department of Labor Standards.

R. CHANGES IN THE WORK

1. The following profit and overhead allowances shall be added to the net extra cost (job cost only) of all changes requiring additional work:
 - a. For the subcontractor, 10% of the net extra job cost.
 - b. For the Contractor, 5% of the net extra job cost of the work performed by subcontractors.
 - c. For the Contractor, 15% of the net extra job costs of the work he performs with his own forces.
2. The cost shall include all direct and necessary production costs of the work itself, i.e. labor and items incidental to labor (such as public liability and workmen's compensation insurance, old age and unemployment insurance, social security), pro-rata charges for foremen, material, and the use of power tools and equipment. Among the items to be considered as overhead and not as cost are insurance other than as mentioned above, premium or bond(s) required by the contractor, supervision, superintendents, timekeepers, clerks, watchmen, small tools, incidental job burdens, and general office expense.
3. The Contractor shall provide a complete itemized breakdown of proposed or actual costs, upon request by the Owner.

S. REGULATORY REQUIREMENTS AND INDUSTRY STANDARDS ORGANIZATIONS

1. The design and construction of project shall conform to codes defined in following list:
 - a. NC Building Code.
 - b. NEC - National Electrical Code
 - c. City of Wilson, NC Building Code
 - d. County of Wilson Building Code
2. Professional and Industry Standards Organizations
 - a. Compliance: Work for this project shall conform to standards published by recognized professional and industry organizations when referenced to in this project manual.
 - b. Edition Date of Reference Standards:
 1. Code Listing – Any reference to standards of any society, institute, association, or governmental agency, which is a part of the building code in effect for this project, shall comply with the edition date published in the referenced edition of the Building Code.
 2. Non-Code Listing – Any reference to standards of any society, institute, association, or governmental agency, which is not a part of the Building Code for this project, shall be the edition in effect at time of opening of bids, except as otherwise specifically stated in this project manual.
 3. Project Manual Listing – Edition dates listed with reference standards in each section of this project manual are included for reference only.
 - c. If reference standards are revised prior to completion of any part of the work to which such revision would pertain, the Contractor may, if acceptable to the Architect and if not in violation of the Building Code, perform such work in accordance with the revised specifications.
3. Abbreviations
 - a. Reference to a technical society, institution, association, or governmental agency made in these specifications is in accordance with the following abbreviations used throughout the specifications:

AASHTO	American Association of State Highway & Transportation Officials.
ACI	American Concrete Institute.
AISC	American Institute of Steel Construction.
ANSI	American National Standards Institute.
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers.
ASME	American Society of Mechanical Engineers.
ASTM	American Society for Testing and Materials.
AWPA	American Wood Preservers Association.
AWS	American Welding Society.
FS	Federal Specifications.
NEMA	National Electrical Manufacturer's Association.

NFPA	National Fire Protection Association.
SIGMA	Sealed Insulating Glass Manufacturers Association.
SMACNA	Sheet Metal & Air Conditioning Contractors National Association.
TCA	Tile Council of America.
UL	Underwriters Laboratories
USDC	US Department of Commerce.

T. EXECUTION, WORKMANSHIP AND COMPLETENESS

1. All work performed under this Contract shall be accomplished by skilled craftsmen experienced with and knowledgeable of the methods, procedures, tools and materials necessary to accomplish the work they are performing.
2. All materials, components and devices shall be installed plumb, true and level, securely and suitably fixed or attached for the use they are intended.
3. All work shown, required or reasonably inferred shall be complete in every respect, with all systems connected and functioning properly.

U. PROJECT CONTRACT DRAWINGS & SPECIFICATIONS

The General Conditions and the Special Conditions shall be a part of all contracts.
The list of contract drawings and specifications for this project is as listed below:

SCHEDULE OF DRAWINGS

COVER SHEET

ARCHITECTURAL

A-1 Thru A-13

PLUMBING

PME-1, PME-2 P-1

MECHANICAL

PME-1, PME-2, M-1

ELECTRICAL

PME-1, PME-2, E-1

SPECIFICATIONS

ARCHITECTURAL

Divisions 1 thru 17

END OF SECTION

**SECTION 01020
ALLOWANCES**

A. ALLOWANCE AMOUNTS TO BE INCLUDED IN BASE BID AMOUNT

1. The contractor shall include an amount for the excavation, removal and replacement with compacted structural fill of 600 cubic yards below the buildings and shall include on his bid form a per cubic yard single unit price for increasing & decreasing the quantity of removal & replacement
2. The contractor shall include an amount for the excavation and replacement with #57 stone of 60 yards below the footings and shall include on his bid form a per cubic yard single unit price for increasing & decreasing the quantity of removal & replacement
4. The Contractor shall include \$30,000 for materials, equipment, devices and labor necessary for the installation of complete & operating egress lighting, fire alarm & detection systems for the stadium as indicated on the drawings complying with all applicable codes & ordinances

B. ADMINISTRATION OF ALLOWANCES

1. Allowance amounts shall be listed separately in the Contractors Schedule of Values.
2. Expenditure of allowance amounts shall be at the sole discretion and approval of the Architect.

SECTION 02200 - EARTHWORK
(Excavation, Filling, Grading Preparation of Grassed
Areas and Installation of Topsoil)

PART I - GENERAL

1.01 WORK INCLUDED

- A. The majority of site work is being performed under separate contract. The contractor shall coordinate his work under this contract with the site contract work.
- B. Cut, clear and remove from the site all debris resulting from this operation before commencing grading and filling operations.
- C. Fill to bottom of new floor slab with compacted structural fill as specified in Section 02200, 3.05 F. Structural Fill.
- D. Remove topsoil from the new paved areas and store for later use.
- E. Grade, fill and rough contour the building pads required.
- F. All fill, backfill, or undercut fill, shall be type of soil as specified in this section and shall be tested and certified at the Owner's expense (see Paragraph 2.01 Materials, A1, 2, 3 & 4). Send all reports to the architect for approval before commencing filling operations.
- G. After removing topsoil, proof roll, (proof roll with loaded 25 ton dump truck) the site at all areas to receive paving and areas to receive concrete slabs on grade such as building area, walks and curb and gutter.
- H. Provide building excavation for column and/or wall footings as shown on the drawings.
- I. Install building pad on structural fill as specified in this section under new floor slabs on grade.
- J. Finish grade site and prepare subsoil for installation of topsoil at grass areas and at all areas disturbed by construction, tree removal and demolition operations and as shown on the drawings.
- K. Install clean topsoil as needed from off site and coordinate distribution of topsoil and lawn preparation with the landscaping contractor.
- L. Furnish and install lime at areas to be grassed.
- M. Install stone base & structural fill under entrance drives, other paving and curb & gutters as shown on the drawings.

1.02 RELATED WORK

- A. Section 02500 – Paving, Surfacing, Curb & Gutter and Walks
- B. Section 02280 – Soil Treatment
- C. Soil Investigation Data (see drawings)

1.03 REGULATORY REQUIREMENTS

- A. Contractor shall obtain permits and pay all fees for grading, sedimentation control, disposal of debris, earth at landfills.
- B. Contractor shall obtain permit for burning debris on site.

1.04 QUALITY ASSURANCE

- A. Test and certify all fill hauled in from off site. Through testing methods recommended by the soils engineer, determine that all imported soils are of proper classification and can meet required compactability tests.

1.05 PROTECTION

- A. Protect trees, shrubs, lawns, and other features selected to remain.
- B. Protect bench marks, sidewalks, paving, and curbs from equipment and vehicular traffic.
- C. Protect above and below grade utilities which are to remain.
- D. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavation.
- E. Notify Architect of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- F. Grade excavation top perimeter to prevent surface water run-off into excavation.
- G. In the event of damage to objects designated to remain as specified and as shown on the drawings and materials used in this section, immediately make all repairs and replacements necessary to the approval of the Architect at no cost to the Owner.

106 JOB RECORDS

- A. Accurately record location of utilities remaining, rerouted utilities, new utilities by horizontal dimensions and elevations of inverts.

PART II - PRODUCTS

2.01 MATERIALS

- A. Fill Material - General: All fill dirt imported for backfilling, structural fill or fill under foundations, building structures (slabs on grade) and asphalt paved areas shall be approved by the Architect.
 - 1. Notification: For approval of fill material, notify Architect and Testing Agency six days prior to import of fill material, designate borrow area and permit Testing Agency to obtain samples as necessary for acceptance tests or proctor to prove quality of material as specified. All testing, of fill material, shall be paid for by the Owner.
 - 2. Satisfactory soil materials for fill, backfilling or undercut fill are defined as those complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, SP, GC, SC, ML, & MH.
 - 3. Unsatisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups CL, CH, OL, OH and PT.
 - 4. Backfill and fill materials imported shall be satisfactory soil materials as specified and certified by a soils engineer testing agency. All testing shall be the responsibility of, and paid for by, the Owner. The approved satisfactory soil materials shall be free of clay, stones, rock, gravel, debris, waste, frozen materials, vegetable or any other deleterious matter.

2.02 EQUIPMENT

- A. The Contractor shall furnish, operate and maintain all mechanical and moving equipment necessary for site clearing, excavation, grading, filling, soil compaction, proof rolling and topsoil spreading.

PART III - EXECUTION

3.01 INSPECTION

- A. Prior to start of all work of this section the Contractor shall visit and become familiar with the site, the site conditions and all portions of work falling within this section.

3.02 PREPARATION

- A. Layout - Contractor shall locate all general reference points, lay out his work and be responsible for all lines, elevations, and measurements of building, grading, paving, utilities and other work executed under this contract. He must exercise proper precaution and verify figures shown on the drawings before laying out work and will be responsible for any errors resulting from his failure to exercise such precaution.

3.03 EXCAVATION

- A. Excavate carefully for footings, foundations, trenches, etc. to size and depths shown on the drawings. If the character of the earth is such that footings cannot be cut to size, or if damaged by rain or otherwise, footings must be formed to sizes indicated with wood forms.
- B. Excavate to lines and elevations. Cut off bottom of trenches and footings level, and remove loose soil. Where soft spots are encountered remove all defective material and replace with concrete.
- C. If suitable bearing for footings is not encountered at the depth indicated on the drawings, the Contractor shall notify the Architect and shall not proceed until instructions are given.

3.04 EXCESS WATER CONTROL

- A. Contractor shall control grade around building to keep excess water, to include ground water and rainwater, from accumulating in excavations by means of berms, trenches and diverting ditches. Should water accumulate in the excavations, Contractor shall, at his own expense, remove the excess water by pumping or bailing, as directed by the Architect.
- B. Unfavorable Weather: Do not place, spread, or roll fill materials during unfavorable weather conditions. Do not resume operations until moisture content and fill density are satisfactory to the Architect.
- C. Softened Subgrade: Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and re-compact as specified for fill and compaction below.
- E. Dewatering: Provide and maintain, at all times, during construction, ample means and devices with which to remove and dispose of all water from every source entering the excavations or other parts of the work. Ensure dry excavations and the preservation of the final lines and grades at bottoms of excavations.

3.05 GRADING

- A. General grading shall be completed as necessary to obtain the elevations as shown on the drawings and herein specified. All excess dirt shall be removed from the site. No backfill shall be placed unless approved by the Architect or the testing agency.
- B. General grading shall be completed to bring entire outside of building to following levels:
 - 1. For paving, walks, and other surfaced areas - finished grade less thickness of such surfacing.
 - 2. For lawns, and planted areas - finish grade less thickness of topsoil.
- C. Grades not indicated shall be uniform between points, graded to maintain drainage.
- D. All bulkfill and backfill shall be mechanically tamped in layers not to exceed 9". No settlement in fill areas shall be apparent upon completion of the project.
- E. After removal of topsoil and other organic or vegetable materials and any other unsuitable material proof roll by four (4) crisscross passes of the areas to receive concrete floor slabs on grade, paved parking areas, drives and concrete walks.
 - 1. All fill under concrete floor slabs on grade, column footings and foundation wall footings shall be compacted to a minimum of 95% of the standard proctor density in accordance with ASTM d-1556 for building areas. Compaction is to be carried out to at least five (5) feet beyond building perimeter. All testing shall be paid for by the Owner.
 - 2. Fill under drives, parking areas and concrete walks shall be compacted to a minimum of 95% of the standard proctor density (ASTM 698). All testing shall be paid for by the Owner.
- F. Structural Fill:
 - 1. Location of structural fill
 - a. Under all new concrete floor slabs on grade, walks, drives, and parking areas and as shown on the drawings.
 - 2. Construction methods of structural fill
 - a. After the site has been cleared, stripped, and excavated to within six inches of the specified depths for recompaction, scarify the exposed surface to a minimum depth of six inches, and compact to the requirements specified for fill below.
 - b. The area to be filled shall be divided into sections or blocks by the inspector for control of the placing operation. Fill material may be placed in a block only upon written approval of the inspector. This fill shall then be rolled or otherwise compacted by sheep's foot, etc., until the specified density has been obtained, as determined by field tests hereinafter described. Approval shall then be given to place more loose fill in the block tested. Placing, compaction, and testing of fill may proceed in more than one block simultaneously.
 - c. Fill shall be placed in layers or lifts not exceeding 9" in depth when loose and shall be compacted by sheep's foot roller. Layers shall be generally level except as required for drainage during construction.
 - d. An independent testing laboratory shall be retained at the expense of the Owner to perform all testing and inspection for the filling operation including certification of fill material.
 - e. At least one field density and moisture content determination shall be made per lift per block. Test holes shall be deep enough to provide a check on the entire depth of the lift being tested. Volume of the hole may be measured by either the rubber balloon or the dry sand method.
 - f. No more than 1000 square feet of area shall be included in each block. Dry density and moisture content of the fill shall be 96% of the maximum as determined by the sand cone method ASTM D-1556 at every 1000 sq. ft. per lift per day.
 - g. If difficulty is encountered in obtaining the above densities, Contractor may be required to reduce the thickness of the lift, use a heavier roller, adjust the moisture content of the soil, or a combination of these procedures.
 - h. Records of tests shall be kept, and furnished to all parties concerned, which shall contain block number, lift number or elevation, test number, dry density, moisture content, percent of maximum density, and approval or disapproval of tested area.
 - i. Verify that all compaction is complete and approved by the Architect prior to excavating for footings and placement of stone base for paving.
- G. Finished Grades: The words "Finished Grades" as used herein mean the required final grade elevations indicated on the drawings. Should finish grades shown by spot elevations conflict with those shown by contours, the spot elevations shall govern.
- H. After grading is completed and the Architect has finished his inspection, permit no further excavating, filling, or grading except with the approval of and inspection of the Architect.
- I. Use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

306. TOPSOIL PLACING AND SUBSOIL PREPARATION

- A. Stored topsoil and topsoil hauled in from off site shall be placed to the depth of 6" on all areas where construction has disturbed the surface, such as areas to be finished with grass sod. Topsoil shall be evened out and raked smooth. It shall be left clean and free from all debris, stones, rocks, brick bats, steel bands, trash or any other debris.
 - 1. Imported topsoil approved by the Architect shall be hauled in from off the site at no cost to the Owner. Topsoil shall be tested for lime, nitrogen, potassium and phosphates. Add ingredients needed as shown by test to include organic matter.
 - 2. Imported topsoil shall be a natural, fertile, friable soil, possessing characteristics of representative productive soils in the vicinity. It shall be obtained from naturally well-drained areas. It shall not be excessively acid or alkaline nor contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil and shall be cleaned and free from clay lumps, rocks, stone, stumps, roots, or similar substances, trash, debris, or other objects. Topsoil shall have an acidity range of 6.0 to 6.5.
 - 3. Lime shall be ground limestone containing not less than 85 percent of total carbonates and shall be ground to such a fineness that 50 percent will pass through a 20-mesh sieve.

3.07 CLEANING UP

- A. On completion of the project, the Contractor shall remove all traces of construction operations.

3.08 SEDIMENTATION CONTROL

- A. All sedimentation control measures as shown on the drawings shall be strictly followed and adhered to and all fences, basins and catch basins as shown shall be installed prior to grading and filling.
 - 1. All sedimentation control devices as shown on the drawings shall be maintained and left in working order until completion of the project.
 - 2. At the completion of the project remove from the site sedimentation fences and all other sedimentation control measures.

END OF SECTION

**SECTION 02280
SOIL TREATMENT**

PART I - GENERAL

- 1.01 WORK INCLUDED
 - A. Chemically treat soil adjacent to all footings.
 - B. Chemically treat soil under all concrete floor slabs on grade.
 - C. All chemical treatment shall be placed before concrete is placed.
- 1.02 RELATED WORK
 - A. Section 02200 - Earthwork.
- 1.03 QUALITY ASSURANCE
 - A. Comply with latest specifications of North Carolina Pest Control Association and The NC Department of Agriculture Structural Pest Control Division.
- 1.04 WARRANTY
 - A. Furnished 5-year guarantee at no cost to Owner.

PART II - PRODUCTS

- 2.01 CHEMICALS IN WATER SOLUTION
 - A. Use chemicals that are approved by the EPA (Environmental Protection Agency) and the North Carolina Department of Agriculture. All chemicals used for termite treatment shall be mixed in accordance with the manufacturer's recommendation to the maximum percentage content allowable and applied in quantity as approved and registered with the E.P.A. and N.C. Department of Agriculture.

PART III - PRODUCTS

- 3.01 APPLICATION
 - A. Apply one gallon per 10 sq. ft. adjacent to footings and floor slabs.
 - B. Apply two gallons per 5 linear feet along all foundation walls, around floor slab openings at interior of project cut for pipes, conduits or interior partitions.
 - C. Do not treat fill when wet or immediately after heavy rain.
 - D. Do not allow surface flow of chemicals from site.
 - E. Do not allow disturbance of soil treatment and human or animal contact.
 - F. Treated area shall be covered and protected if vapor barrier, stone fill or concrete is not promptly placed.

END OF SECTION

**SECTION 02500
PAVING AND SURFACING
CURB & GUTTER AND WALKS**

PART I - GENERAL

- 1.01 WORK INCLUDED
 - A. Furnished all labor, materials and equipment for the complete installation of concrete walks,
- 1.02 RELATED WORK
 - A. Earthwork: Section 02200.
- 1.03 QUALITY ASSURANCE – Curb & Gutter, Walks and Bituminous paving shall meet the following requirements:
 - A. NC Building Code.
 - B. NC State Department of Transportation - Standard Specifications for Roads and Structures Jan. 1, 1990.
 - C. Building Code of the City or County having jurisdiction.
- 1.04 ENVIRONMENTAL REQUIREMENTS
 - A. Portland Cement Concrete
 - 1. Do not place concrete below 40 degrees F. or when freezing temperatures are expected.
 - 2. Do not place concrete during rain, sleet, or snow.
- 1.05 PROTECTION
 - A. Protect portland cement concrete from traffic for minimum of 7 days.

PART II - PRODUCTS

- 2.01 MATERIALS
 - A. Ready Mixed Concrete
 - 1. Mix design - Paragraph 3.9 proportioning on the basis of previous field experience ACI 301-84.
 - 2. Strength 3000 P.S.I.
 - B. Reinforcing Steel
 - 1. Bars ASTM A615, Grade 40.
 - 2. Welded Wire Fabric as shown on the drawings.
 - B. Expansion Joint Fillers

PART III - EXECUTION

- 3.01 INSPECTION
 - A. Verify that earthwork is completed to correct lines and grade.
 - B. Check that sub-grade is smooth, compacted with no soft spots and free of frost or excessive moisture.
 - 1. Soft spots shall be removed and re-filled with stone or suitable fill materials approved by the Architect, and rolled to 95% compaction in accordance with ASTM D 698. Testing by Owner.
 - 2. All material removed from soft spots or soft earth from areas that previously existed under structures shall be removed from the site.
 - C. Do not commence work until conditions are satisfactory.
- 3.02 INSTALLATION
 - A. Subgrade Preparation
 - 2. Subgrade under sidewalks shall be hand dressed to size and level required and mechanically tamped for 95% compaction. Testing and payment of same shall be by contractor from allowance.

- B. Cast in Place Concrete
1. Concrete shall be installed at curb & gutter, walks and concrete paved areas as shown on the plot plan and shall be of 3000 P.S.I. concrete.
 - a. Set metal forms to lines & grades as shown on the drawings and adjust to fit special site conditions for curb & gutter.
 - b. Install metal forms over full length at curb & gutter.
 - c. Position integral curb & gutter joints at same location as walks or pavement joints.
 - d. Use standard metal form length and radii between curb & gutter joints.
 2. Walk construction joint shall be formed with a suitable grooving tool as follows:
 - a. 5' intervals for walks or as otherwise shown on the drawings.
 - b. As shown on drawings for other paved areas.
 3. Install 1/2" thick asphalt saturated felt expansion joint material as follows:
 - a. At walks, walls or curbs that abut building.
 - b. At walks or curbs that abut each other.
 - c. Intersections of walks or concrete work.
 4. Finish shall be wood float carefully broomed out.
 5. Reinforce walks, paved areas, and entrance aprons with 6x6/10-10 welded wire steel mesh and steel reinforcing bars as shown on the drawings.
 6. Form edges at walks.
 7. Walks shall be sloped to drain.
 8. Do not backfill until at least 3 days curing.

3.03 FLOOD TEST

- A. Prior to acceptance of the project, perform a flood test in the presence of the Architect.
- B. Perform flooding by use of a water tank truck.
- C. If a depression is found where water ponds to a depth of more than 1/8", Remove and replace concrete to provide proper drainage.
- D. Feather and smooth the edges of fill so that the joint between fill and original surface is invisible.

END OF SECTION

SECTION 03300
CAST IN PLACE CONCRETE

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish all materials, labor, and equipment necessary for the installation and completion of all cast in place concrete work shown or reasonably implied by the drawings and these specifications.
- B. Furnish and install complete, in place, all steel required for reinforcement of cast-in-place concrete as shown on the drawings.
- C. Concrete shall contain no slag or fly ash. The cementitious portion of the mix design shall be 100% portland cement.

1.02 QUALITY ASSURANCE

- A. "ACI Standard Specifications for Structural Concrete for Buildings" ACI Standard 301-89, ACI 307-89, is hereby made a part of this specification to the same extent as if bound herein. ACI 301-89 shall be amended, supplemented, or deleted as required by the following paragraphs and as such constitutes the specification for this project. The Contractor shall keep a copy of ACI 302-89 for field reference, copies may be obtained from American Concrete Institute, Box 4754, Redford Station, Detroit, Michigan 48219.
- B. C.R.S.I. "Manual of Standard Practice".
- C. A.C.I. 318 Building Code Requirements for Reinforced Concrete.
- D. A.C.I. 315 Concrete Form Work.
- E. "Building Official" as referred to in A.C.I. publications shall be implied as the Owner or their official representative.
- F. Approval before placing concrete shall be obtained for all subgrades, footings, forms, reinforcing and construction joints.

1.03 SUBMITTALS

- A. Submit five copies of concrete mix design. Mix design shall contain no slag or fly ash.
- B. Submit five copies of reinforcement showing:
 - 1. Bar schedules, stirrup spacing, diagrams of bent bars, and arrangements and assemblies.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver steel reinforcement to the job site bundled, tagged, and marked. Use metal tags indicating bar size, lengths and other data concerning placement.
- B. Store steel reinforcement at job site in a manner to prevent damage and accumulation of dirt and excessive rust.
- C. Delivery transit mixed concrete from approved batching and mixing plant in accordance with ASTM C94.

PART II - PRODUCTS (SEE PART III EXECUTION)

PART III - EXECUTION

3.01 CONCRETE AND STEEL REINFORCEMENT WORK

- A. Concrete work to include formwork and steel reinforcement shall conform to all requirements of ACI 301-89, Specifications for Structural Concrete for Buildings, except as modified by the Supplemental Requirements below:

GENERAL (Chapter 1)

- 1.1.1 - Submit shop drawings (See 1.03, B).

MATERIALS (Chapter 2)

22.1 - All chemical admixtures must be submitted for approval. The following admixtures are approved. Substitutions must be submitted and approved by the Architect.

- 1. Air entraining admixtures: Darex AEA by Dewey & Almy, or MB-VR Type 3A by Master Builders Co.

2. Water reducing and set controlling admixtures. Pozzolite by Master Builders Company, Placewell by Union Carbide Corp., or WRDA by W.R. Grace & Co.

PROPORTIONING (Chapter 3)

- 3.2.1. - Concrete strength and type (regular or lightweight) shall be as shown on the drawings. Type III Cement (high early strength) shall not be used.
- 3.2.2. - Strength and weight shall be 3000 psi regular weight minimum and/or as otherwise shown on the drawings.
- 3.8.2. - Proportioning of all concrete shall be in accordance with Paragraph 3.9 (Proportioning on the Basis of Previous Field Experience). No fly ash or slag will be permitted in the mix design. The cement portion of the mix design shall be 100% portland cement.

FORMWORK (Chapter 4)

- 4.1.3. - Where soil conditions will permit excavation and placing of concrete to accurate dimensions without cave-ins, side forms of footings may be omitted.

REINFORCEMENT (Chapter 5)

- 5.2.1. - Reinforcing shall conform to ASTM A615, Grade 60 unless otherwise noted. Reinforcing bars shall not be heated for bending.
- 5.5.4. - Welded wire fabric in structural slabs shall be considered load carrying reinforcement. Comply with ASTM A185. Welded wire fabric sizes shall be as shown on the drawings.

JOINTS & EMBEDDED ITEMS (Chapter 6)

- 6.1.4 - All construction joints where shown or as necessary on the drawings shall be bonded. Saw-cut control joints shall be filled with sealant with minimum shore hardness of 80.
- 6.2.2 - Pre-molded expansion joint filler shall be 1/2" thick unless otherwise indicated on plans and shall be asphalt impregnated. Filler shall be full width and depth of abutting sections. Where in contact with joint sealer, filler shall be compatible with joint sealer. For slabs on grade set continuous joint strips where edge of slab abuts vertical surface.
- 6.4.3. - Aluminum conduit or aluminum accessories shall not be embedded in concrete.
- 6.4.4. - Dovetail slots and similar miscellaneous embedded items to be submitted for approval. Accessories required by other prime contractors to be supplied by those contractors.
- 6.5 - Approval of the Architect shall be obtained before placing sleeves through slabs, channels, beams, columns, and walls unless shown on the drawings.

PLACING (Chapter 8)

- 8.1.2 - No concrete shall be placed prior to approval of the Architect of subgrades, footing bottoms, forms, reinforcing and joints.
- 8.4.3. - No concrete shall be placed when the temperature is below 40 degrees F. and falling or when freezing temperatures are expected within 24 hours, unless written permission is obtained from the Architect. Approval shall be for the agreed procedure only.

FINISHING OF FORMED SURFACES (Chapter 10)

- 10.2.1 - Rough form finish - All concrete surfaces not exposed to public view.
- 10.3.1 - Smooth rubbed finish - All concrete exposed to public view.

SLABS (Chapter 11)

11.7 - Finishes for Slabs:

1. Trowel Finish - Exposed floors and floors to receive paint, carpet and resilient tile shall have trowel finish Tolerance Class A.
2. Scratched Finish - Surfaces to receive ceramic tile, quarry tile, and other finishes requiring underbed.
3. Non-Slip Finish - Exterior walks and exterior slabs.
4. Floor Sealer:
 - a. One coat of sealer shall be applied to all concrete floors on interior of building. (Except areas to receive bonded finish, such as stain or paint - see 12.1 below)

- b. “Masterseal” as manufactured by Master Builders, Clear Bond by Guardian, Horn Clean Seal 12 or approved equal shall be used.
- c. Install as soon as concrete has set sufficiently not to be marred by application.
- d. Install per manufacturer’s printed specifications. Submit these specifications for approval before proceeding (5 copies).

CURING AND PROTECTION (Chapter 12)

12.1 - Liquid curing compounds shall not be used on surfaces to which any type of topping or finish material is to be bonded to the slab.

TESTING CONCRETE (Chapter 16)

16.2.1 - All testing shall be paid for by the Owner. The Owner shall arrange for and contact the independent testing laboratory for the proper services as outlined in this section for testing concrete.

16.3 - A minimum of one sample to be taken for each 100 cu. yd. of concrete, or portion thereof, placed each day. A sample shall consist of five standard cylinders; two to be tested at seven day, two to be tested at 28 days, and one reserved for future testing as needed by the Architect. Sampling and testing of concrete in the field shall be done in accordance with the requirements of ASTM C31 and ASTM C39. An independent testing laboratory shall be approved by the Architect to provide sampling and testing service in both field and laboratory. The independent testing laboratory providing this service shall bear full responsibility for sampling and handling of concrete specimens.

ACCEPTANCE OF STRUCTURE (Chapter 18)

18.1 - Should there be cause to suspect that air content does not meet specifications, tests shall be performed on the hardened concrete in accordance with ASTM CA57, if directed by the Architect.

END OF SECTION

SECTION 04200
MORTAR & UNIT MASONRY

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor and materials necessary for the complete installation of all masonry work as shown on the drawings and as specified in this section.
- B. Concrete masonry work complete with reinforcement, and foundation walls.
- C. Mortar for masonry.
- D. Built-in items supplied by other trades.
- E. Cut and fit all masonry for work at other sections.
- F. Dry-stacked concrete masonry retaining walls.

1.02 RELATED WORK

- A. Concrete Work - Section 03300.
- B. Rough Carpentry - Section 06100.

1.03 QUALITY ASSURANCE - COMPLY WITH STANDARDS LISTED BELOW:

- A. ASTM Standards
 - 1. ASTM C270 Mortar.
 - 2. ASTM C90 Concrete Masonry Units.
- B. Specifications National Brick Institute for Mortar and Masonry Installation (Brick or Concrete)
- C. Testing, if required by the Owner shall be in accordance with methods prescribed by ASTM for masonry mortars. Tests required shall not exceed one set of cubes per five cubic yards of mortar. Sampling and testing shall be done by an independent testing laboratory. Cost of testing shall be paid by the Owner.

1.04 SUBMITTALS

- A. Certification: Submit to the Architect certification that all concrete masonry units are manufactured from 100% lightweight aggregates as specified in this section.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store masonry off ground to prevent contamination by mud, dust or materials likely to cause staining or other defects.
- B. Cover materials when necessary to protect from elements.
- C. Protect masonry wall reinforcement from elements.

1.06 JOB CONDITIONS

- A. Protection of Work:
 - 1. Wall covering:
 - a. During erection, cover top of wall with strong waterproof membrane at end of each day or shutdown.
 - b. Cover partially completed walls when work is not in progress.
 - c. Extend cover minimum of 24 in. down both sides. Hold cover securely in place.
 - 2. Load application:
 - a. Do not apply uniform loading for at least 12 hours after building masonry columns or walls.
 - b. Do not apply concentrated loads for at least 3 days after building masonry columns or walls.
- B. Staining:
 - 1. Prevent grout or mortar from staining the face of masonry to be left exposed or painted.
 - a. Immediately remove any grout or mortar in contact with face of such masonry.
 - b. Protect all sills, ledges and projections from droppings of mortar, protect door jambs and window frames from damage during construction. All damaged door jambs or metal window frames damaged by mortar shall be replaced by this Contractor at no cost to the Owner.
- C. Cold Weather Protection:
 - 1. Preparation:
 - a. If ice or snow has formed on masonry bed, remove by carefully applying heat until top surface is dry to the touch.
 - b. Remove all masonry deemed frozen or damaged.

2. Products:
 - a. Use dry masonry units.
 - b. Do not use wet or frozen units.
3. Construction requirements while work is progressing:
 - a. No masonry work shall be done when temperature is below 40 degrees F. and falling or when freezing temperatures are predicted with 24 hours.

PART II - PRODUCTS

2.01 MASONRY UNITS, MORTAR, SAND AND WATER

- A.
 1. Mortar mix shall be Brixment, ASTM C270 Type "S" with hydrated lime all masonry work.
 2. Mortar at veneer units shall be colored. Color to be selected by Architect.
- B. Sand shall be clean, well graded, free of soluble salts and organic matter. It shall be first quality North Carolina bank or pit white sand carefully piled on job site and kept free from weeds, dirt and other foreign matter.
- C. Water shall be potable and free from excessive alkali, oil, and other contaminating matter.
- D. Concrete masonry veneer units where shown on the drawings shall be Ground Face Masonry Units and shall be single scored (V1). Ground Face Masonry Units shall conform to ASTM C90, TYPE 1. Units shall be equal to TRENDSTONE with color to be selected by the Architect.
- E. Standard concrete masonry units shall conform to the requirements of ASTM Specification C90, latest revision, Grade N-1 for hollow load bearing concrete masonry units.
 1. No chipped or cracked units shall be installed in masonry walls. All chipped or cracked units shall be removed and replaced with solid units at no cost to the owner. All masonry walls shall be thoroughly inspected during erection and all chipped or marred units will be marked for replacement.
 2. All aggregate used in the concrete masonry units for this project shall conform to ASTM Specification C-331 "Lightweight Aggregates for Concrete Masonry Units.
 3. The use of coal cinder aggregates, so-called bottom ash, or similar waste products, granite or sand will not be acceptable. The blending of screenings or any other deleterious substance which will impair the fire rating or the insulation value of the unit is prohibited. All units shall be free of organic impurities that will cause rusting, staining or pop outs and shall contain no combustible matter.
 4. The air dry weights of all units shall not exceed the following:

4x8x16 -- 16 pounds	4x8x16 -- 75% solid -- 22 pounds
6x8x16 -- 20 pounds	6x8x16 -- 75% solid -- 29 pounds
8x8x16 -- 26 pounds	8x8x16 -- 75% solid -- 38 pounds
12x8x16 -- 37 pounds	12x8x16 -- 75% solid -- 56 pounds
 5. A random sample of the concrete masonry units shall be taken one or more times during construction of the project and tested by an independent lab to assure that the concrete masonry units conform to all specifications.
 6. The producer of the concrete masonry unit shall furnish a letter of certification stating that all aggregate used in the manufacture of these units was expanded shale produced by rotary kiln process, 100% Solite, Stalite, Vitalite or approved equal, conforming to ASTM C-331.
 7. Concrete masonry units shall be square, true and have sharp arrises.
 8. Concrete masonry units shall be of consistent texture and shall be dimensionally stable in regard to height, width and length.
 9. Concrete masonry units shall be in sizes as shown on the drawings.
- F. Special Concrete Masonry Units – Provide special concrete masonry units for construction of dry stacked masonry retaining walls as shown on the drawings.
 1. Special CMU's shall be solid units made from high-strength, low-absorptive concrete and shall have holes and slots molded into units to accept nylon/fiberglass pins which are inserted in the uppermost course and are received in slots of adjacent lower course units. Pins interlock units to provide consistent horizontal alignment and proper 3/4" set-back at each vertical course.
 2. Special CMU's shall have a natural split-face texture and shall be trapizoidal in shape. Units shall be 6" high with 16" width on face side, 14" width on rear side and shall be 12" deep.

2.02 REINFORCEMENT

- A. Anchors and Ties
 1. Wire mesh:
 - a. Minimum gage: 20
 - b. Mesh: 1/2 inch.

- c. Galvanized wire.
 - d. Width: 1 inch less than width of masonry.
 - 2.. Wall ties for foundation wall:
 - a. Reinforcement for concrete masonry foundation walls shall be truss type pre-fabricated with flush welded joints sized for walls shown; by AA Wire Products or an approved equal. Equip with moisture drip at cavity walls.
 - b. Corners of masonry walls shall be reinforced with prefabricated corner assembly with welded joints.
 - c. Intersecting walls shall be tied together by reinforcement of prefabricated "T" assemblies with walled joints.
 - d. Wires shall be galvanized, corrugated in 9 gauge.
 - e. All wires shall be flush welded.
 - f. Spacing in walls: 16" o/c.
 - 3. Masonry Veneer Wall Ties (Dur-o-wall, A.A., or Heckman)
 - a. Two-piece galvanized masonry wall ties with 3/16" dia. triangle and 7/8" x 6 1/2" long anchor strap.
 - b. Install one every 16" o/c horizontally and vertically.
- 2.03 MORTAR MIX
- A. Mixing of mortar shall be by drum mixer.
 - 1. Measurement of ingredients shall be by volumetric or weight measure.
 - 2. Shovel count of ingredients shall not be permitted.
 - 3. Sand and cement shall be dry mixed, then water shall be added to bring mixture to a workable degree of plasticity consistent with intended use.
 - 4. Mortar color shall be thoroughly mixed in with mortar mix at the mortar mix manufacturer.
 - 5. The minimum period of mixing shall be three minutes.
 - 6. No mortars that have stood more than an hour shall be used.
 - 7. No re-tempering of mortar shall be allowed.
 - B. Proportions shall be as recommended by the manufacturer.
- 2.04. CLEANING AGENTS
- A. Do not use cleaning agent other than water on brick.
 - B. The use of acid will not be permitted.
- 2.05 CONCRETE
- A. Concrete for bond beams and lintels shall be 3000 P.S.I. Concrete grout in the form of mortar shall not be permitted.

PART III - EXECUTION

- 3.01 PREPARATION
- A. Supply metal anchors to Sections (03300) (05120) for placement. Provide sufficient quantity, and direct their correct placement.
 - B. Ensure that items built-in by other trades for this work are properly located and sized.
 - C. Established lines, levels and coursing. Protect from disturbances.
 - D. Provide temporary bracing duration erection of masonry work. Maintain in place until building structure provides permanent bracing.
- 3.02 INSTALLATION
- A. All masonry shall be damp when laid, except in cold weather.
 - B. Place masonry plumb and to lines and levels indicated on the drawings.
 - C. Walls shall be erected not more than scaffold high until the mortar has reached its complete set.
 - D. Do not shift or tap masonry after mortar has taken initial set. Where adjustments must be made, remove mortar and replace.
 - E. All cutting required in masonry work to fit openings to receive work for other trades and at steel columns, etc. shall be done with a motor driven carborundum saw. No chipped units will be acceptable.
 - F. Masonry units shall be shoved into place, not laid, in a full bed of mortar. All head joints shall be filled with mortar. Do not furrow mortar bed.
 - G. Fully bond external and interior corners. At intersecting walls use fabricated reinforcement as specified for concrete masonry.

- H. All horizontal and vertical joints shall be of same width and vertical joints (head joints) shall be plumb throughout project.
 - I. Ensure all masonry courses are of uniform height properly jointed with other work.
 - J. Remove excess mortar and projections. Keep cavities clear by using lift boards or cleaning out cavity as work progresses. Do not let mortar fall into cavities or plug weep holes.
 - K. Install weep holes at 2'-8" o.c. or as shown on the drawings.
- 3.03 PLACING AND BONDING
- A. Lay Ground Face Veneer Units in stack bond. Coursing shall be one (1) block course and one (1) mortar joint to equal eight (8) inches. Mortar joints shall be formed into a concave joint with a minimum 2" diameter pipe. Do not tool joints too early, wait until joints are thumbprint hard. Tuck point and form single score in Ground Face Units to match coursing joints.
 - B. Lay standard concrete block, in back-up walls and in retaining walls, in running bond. Course one block unit and one mortar joint to equal 8 inches. Form concave mortar joints.
 - C. Apply minimum 3/8" thick parge coat to exterior face of retaining wall as shown on the drawings.
 - D. Build inner wythe of cavity walls ahead of outer wythe.
 - E. Install flashing and/or vapor barrier as work progresses.
 - F. All items required to be built into masonry shall be built in as masonry is erected and space around such built-in items such as sleeves, conduit, electrical boxes in fire rated walls shall be solidly filled with masonry and mortar.
 - G. Any chases, pockets, and reglets required in the wall by other contractors shall be installed and kept free from mortar and other materials. Where concrete masonry unit partitions intersect or abut other partitions, they shall be regularly bonded and all continuous perpendicular joints will be avoided.
 - H. Where concrete masonry unit partitions intersect or abut other partitions at an angle do not bond but anchor with wire mesh reinforcement.
- 3.04 REINFORCEMENT AND ANCHORAGE
- A. Install horizontal joint reinforcement 16" on center. Use reinforcement with drip at exterior cavity walls.
 - B. Reinforcement shall be properly sized for wall thickness.
 - C. Place horizontal masonry reinforcing in first and second joints above and below openings. Place continuous in first and second joints below top of walls.
 - D. Fully reinforce corners and intersections using pre-fabricated units or wire mesh at angle intersections.
 - E. Lap masonry reinforcing splices 6" or one joint of wire reinforcement.
 - F. Place reinforcing bars as shown on the drawings at bond beams and lintels supported and secured against movement or displacement.
 - G. Secure masonry veneer to wood stud framed back-up with wall ties at maximum 16" o/c vertically and horizontally. Embed ties at least 3" in mortar bed.
- 3.05 THROUGH-WALL FLASHINGS
- A. Place through-wall flashings in accordance with manufacturer's recommendations.
 - B. Extend flashings through veneer, turn up minimum 8 inches and adhere with mastic and screw through sheathing into wood stud framed back-up. Lap end joints minimum 6 inches and seal watertight. Use flashing manufacturer's recommended adhesive.
- 3.06 CONTROL JOINTS
- A. Install control joints at 30' o/c or as otherwise shown on the drawings. Install compressible filler and compatible sealant to provide watertight joints flush with face of masonry walls.
 - B. Do not continue masonry reinforcing across control joints.
- 3.07 GROUTED COMPONENTS (FOUNDATION WALLS)
- A. Keep grout cores or spaces clean from mortar dripping and other trash.
 - B. Grout shall be 3000 P.S.I. concrete and shall be installed in masonry walls as shown on the drawings.
 - C. Place grout and consolidate without disturbing reinforcing.
 - D. Install grout in lifts not to exceed scaffold height.
 - E. Do not place grout until masonry has seven (7) day set.
 - G. Agitate grout by puddling to ensure grout fills cores or spaces to be filled.
- 3.08 DRY STACKED CMU RETAINING WALL
- A. Prepare leveling pad for retaining wall in accordance with the instructions of the manufacturer. After compacting and leveling the pad, place the first course of units in the center of the leveling pad. Place the units

side by side and level each unit from front to rear, side to side and with adjacent units. Align straight walls by using a string line strung along the back of the units. After install the base course, place and compact soil backfill behind the units until you have buried the entire base course.

- B. Lay subsequent retaining wall courses and insert pins through holes in uppermost units and into slots of adjacent lower courses. Pins interlock units and provide consistent alignment horizontally and consistent 3/4" setback of each course.
 - C. Provide and install geosynthetic grid mats for wall reinforcement as shown on the drawings and as instructed by the manufacturer. Carry walls to elevations as shown on the drawings.
- 3.08 CLEANING
- A. Remove excess mortar and smears upon completion of masonry work.
 - B. Point up nail holes and or replace defective mortar. Match adjacent work.
 - C. Clean soiled surfaces using a non-acidic solution which will not harm masonry or adjacent materials. Consult masonry manufacturer for acceptable cleaners. Use non-metallic tools in cleaning operations. Acid will not be permitted.

END OF SECTION

**SECTION 05120
STRUCTURAL STEEL**

PART I - GENERAL

- 1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- 1.02 SUMMARY
- A. This Section includes fabrication and erection of structural steel work, as shown on drawings including schedules, notes, and details showing size and location of members, typical connections, and types of steel required.
1. Structural steel is that work defined in American Institute of Steel Construction (AISC) "Code of Standard Practice" and as otherwise shown on drawings.
 2. Miscellaneous Metal Fabrications are specified elsewhere in Division 5.
 3. Refer to Division 3 for anchor bolt installation in concrete, Division 4 for anchor bolt installation in masonry.
- 1.03 SUBMITTALS
- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
1. Structural steel (each type), including certified copies of mill reports covering chemical and physical properties.
 2. High-strength bolts (each type), including nuts and washers.
 3. Structural steel primer paint.
 4. Shrinkage-resistant grout.
- C. Shop drawings including complete details and schedules for fabrication and assembly of structural steel members, procedures, and diagrams.
1. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols and show size, length, and type of each weld.
 2. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed as work of other sections.
- D. Test reports conducted on shop and field-bolted connections, stud welding, field welded connections and tests of shop welded connections as specifically called for on the drawings. Include data on type(s) of test conducted and test results.
- 1.04 QUALITY ASSURANCE
- A. Codes and Standards: Comply with provisions of following, except as otherwise indicated:
1. American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges".
 2. AISC "Specifications for Structural Steel Buildings", including "Commentary."
 3. "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" approved by the Research Council on Structural Connections.
 4. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel".
 5. ASTM A 6" General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use."
- B. Qualifications for Welding Work: Qualify welding procedures and welding operators in accordance with AWS "Qualification" requirements.
1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.
 2. If re-certification of welders is required, retesting will be Contractor's responsibility.
- 1.05 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials to site at such intervals to ensure uninterrupted progress of work.

- B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not to delay work.
- C. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration. If bolts and nuts become dry or rusty, clean and re-lubricate before use.
 - 1. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

PART II - PRODUCTS

2.01 MATERIALS

- A. Metal Surfaces, General: For fabrication of work that will be exposed to view, use only materials that are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating, and applying surfaces finishes.
- B. Structural Steel Shapes, Plates, and Bars: ASTM A 36 and ASTM A 992-Grade 50 as noted on the drawings.
- C. Cold-Formed Steel Tubing: ASTM A 500, Grade B, $F_y = 46$ ksi
- D. Hot-Formed Steel Tubing: ASTM A 501.
- E. Steel Pipe: ASTM A 53, Type E or S, Grade B; or ASTM A 501.
- F. Steel Castings: ASTM A 27, Grade 65-35, medium-strength carbon steel.
- G. Anchor Rods: ASTM A 307, non-headed type unless otherwise indicated.
- H. Expansion Bolts: Federal Specification FF-S-325, Group II, Type 4, Class 1.
- I. Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular low-carbon steel bolts and nuts.
 - 1. Provide hexagonal heads and nuts for all connections.
- J. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows:
 - 1. Quenched and tempered medium-carbon steel bolts, nuts, and washers, complying with ASTM A 325.
 - 2. Where indicated as galvanized, provide units that are zinc coated, either mechanically deposited complying with ASTM B 695, Class 50, or hot-dip galvanized complying with ASTM A 153.
- K. Electrodes for Welding: Comply with AWS Code. Use E70XX series for all field welding of structural steel shapes, plate, etc. Use E60XX series for welding of composite floor deck and where roof deck is welded to beams.
- L. Structural Steel Primer Paint: SSPC - Paint 13.
- M. Nonmetallic Shrinkage-Resistant Grout: Premix, nonmetallic, non-corrosive, non-staining product containing selected silica sands, Portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with CE-CRD-C621.
 Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - 100 Non-Shrink Grout (Non-Metallic); Conspec, Inc.
 - Supreme Grout; Cormix, Inc.
 - Sure Grip Grout; Dayton Superior
 - Euco N.S.; Euclid Chemical Co.
 - Crystex; L & M Construction Chemicals, Inc.
 - Masterflow 713; Master Builders.
 - Sealtight 588 Grout; W. R. Meadows.
 - Propak; Protex Industries, Inc.
 - Set Non-Shrink; Set Products, Inc.
 - Five Star Grout; U.S. Grout Corp.

2.02 FABRICATION

- A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members where indicated.
 - 1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.
 - 2. When finishing is required, complete assembly, including welding of units, before start of finishing

operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.

- B. Connections: Weld or bolt shop connections, as indicated.
- C. Bolt field connections, except where welded connections or other connections are indicated.
 - 1. Provide high-strength threaded fasteners for all bolted connections.
- D. High Strength Bolted Construction: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts".
- E. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.
- F. Assemble and weld built-up sections by methods that will produce true alignment of axes without warp.
- G. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld shear connectors in field, spaced as shown, to beams and girders in composite construction. Use automatic end welding of headed stud shear connectors in accordance with manufacturer's printed instructions. Manually welded shear connectors are not permitted. Do not weld shear connectors to bent plates or pour-stops. Studs must be welded directly to the beam flanges.
- H. Steel Wall Support Framing: Select members that are true and straight for fabrication of wall support framing. Straighten as required to provide uniform, square, and true members in completed wall framing.
- I. Build up welded doorframes attached to structural steel framing. Weld exposed joints continuously and grind smooth. Plug-weld steel bar stops to frames, except where shown removable. Secure removable stops to frames with countersunk, cross-recessed head machine screws, uniformly spaced not more than 10 inches o.c., unless otherwise indicated.
- J. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings.
- K. Provide threaded studs and/or bolts with nuts welded to framing and other specialty items as indicated to receive other work.
- L. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning. Drill holes in bearing plates.
- M. Expansion Joints: Provide expansion joints in steel shelf angles when part of structural steel frame; locate at exterior panel construction joints or as indicated on drawings.

2.03 FINISHES

- A. General: Shop-paint structural steel, except those members or portions of members to be hot-dipped galvanized as indicated on the drawings. All steel & connections at Stadium shall be hot dipped galvanized.
 - 1. Do not paint surfaces scheduled to be field welded.
 - 2. Apply 2 coats of paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.
- B. Surface Preparation: After inspection and before shipping, clean steelwork to be painted. Remove loose rust, loose mill scale, and spatter, slag, or flux deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC) as follows:
- C. SP-1 "Solvent Cleaning: and/or SP-2 "Hand-Tool Cleaning".
- D. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide dry film thickness of not less than 1.5 mils. Use painting methods that result in full coverage of joints, corners, edges, and exposed surfaces.
- E. Galvanizing: All structural steel framing where indicated on the drawings shall be galvanized. Apply zinc coating by the hot-dip process complying with the following requirements:
 - 1. ASTM A 153 for galvanizing iron and steel hardware.
 - 2. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strips 0.0299 inches (0.76 mm) thick or thicker.
 - 3. ASTM A 385 and A 386 for galvanizing assembled steel products.
- F. Finish gratings, frames and supports after assembly.

2.04 SOURCE QUALITY CONTROL

- A. General: Materials and fabrication procedures are subject to inspection and test in mill, shop and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
 - 1. Promptly remove and replace materials or fabricated components that do not comply.
- B. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions,

unless otherwise indicated. Verify dimensions at site whenever possible without causing delay in the work.

1. Promptly notify Architect whenever design of members and connections for any portion of structure are not clearly indicated.

PART III - EXECUTION

3.01 ERECTION

- A. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.
- B. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.
- C. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete work.
- D. Setting Bases and Bearing Plates: Clean concrete bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates.
 1. Set loose and attached base plates and bearing plates for structural members on steel wedges, shims or other adjusting devices.
 2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.
 3. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure.
 4. For proprietary grout materials, comply with manufacturer's instructions.
- E. Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- F. Level and plumb individual members of structure with specified AISC tolerances.
- G. Splice members only where indicated and accepted on shop drawings.
- H. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds, and grind smooth at exposed surfaces.
 1. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
 2. Do not enlarge unfair holes in members by burning or by using drift pins. Ream holes that must be enlarged to admit bolts.
- I. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in structural framing without prior approval by the Architect. Cutting will not be permitted on members that are under stress. Finish gas-cut sections equal to a sheared appearance when permitted.
- J. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas using same material as used for shop painting. All field welds shall be cleaned of weld slag and painted.
- K. Apply by brush or spray to provide minimum dry film thickness of 1.5 mils.
- L. For galvanized surfaces, clean welds, bolted connections, and abraded areas, and apply galvanized repair paint to comply as follows:
 1. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds in galvanized steel, with dry film containing not less than 95 percent zinc dust by weight, and complying with DOD-P-21035 and ASTM A 780.
 2. Apply repair paint to all breaks on hot-dip surfaces caused by cutting, welding, drilling or undue abrasion.
 3. All areas prescribed shall be re-galvanized by use of a product containing 95% zinc in the dried film and listed by Underwriters Laboratories as an equivalent to hot-dip galvanizing such as ZRC Cold Galvanizing Compound or Z.R.C. Galvilite, manufactured by ZRC Products Company, Quincy, Massachusetts or approved equal.

4. By brush or spray, on all damaged areas, apply two coats totaling a minimum dry film thickness of 3 mils, using manufacturer's printed re-coat directions. First coat should be applied within two hours after damage to the hot-dip film to prevent undue oxidation of exposed surface. On all welds, remove weld spatter by power-wire-brushing or equivalent before applying ZRC. Repair material should extend at least 3 inches beyond all edges of the damaged galvanized area to assure continuity of galvanic protection.
5. Remove all ceramic base shields from composite beam headed shear studs.

3.02 QUALITY CONTROL:

- A. The Owner shall engage an independent testing and inspection agency to inspect high-strength bolted connections and welded connections and to perform tests and prepare test reports.
- B. Testing agency shall conduct and interpret tests, state in each report whether test specimens comply with requirements, and specifically state any deviations thereof.
- C. Provide access for testing agency to place where structural steel work is being fabricated or produced so that required inspection and testing can be accomplished.
- D. Correct deficiencies in structural steel work that inspections and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as necessary to reconfirm any noncompliance of original work and to show compliance of corrected work.
- E. Shop-Bolted Connections: Inspect or test in accordance with AISC specifications.
- F. Field-Bolted Connections: Inspect in accordance with AISC specifications; minimum torque shall be 175 ft lbs. unless otherwise noted in the drawings.
- G. Field Welding: Inspect and test during erection of structural steel as follows:
 1. Certify welders and conduct inspections and test as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
 2. Perform visual inspection of all welds.
 3. Perform non-destructive tests of welds where noted on the drawings:
 4. Ultrasonic Inspection: ASTM E 164, all butt-welded "WC" wind frame connections and other locations where noted on the drawings.
- H. In addition to visual inspection, field-welded shear connectors will be inspected and tested according to requirements of AWS D1.1 for stud welding and as follows:
 1. Bend tests will be performed on field welded shear connectors as follows:
 - a) All studs that reveal less than a continuous 360-degree flash
 - b) All studs that show evidence of welding repairs having been made
 - c) 25% of all other studs.
- I. Test will be conducted on additional shear connectors when weld fracture occurs on shear connectors already tested, according to requirements of AWS D1.1.

END OF SECTION 05120

SECTION 05500
MISCELLANEOUS METALS

PART I - GENERAL

- 1.01 WORK INCLUDED
 - A. Furnish and install all miscellaneous metal complete, in place, as shown or reasonably implied by the drawings.
- 1.02 QUALITY ASSURANCE
 - A. Comply with standards of paragraph entitled "REGULATORY REQUIREMENTS & INDUSTRY STANDARDS ORGANIZATIONS" of Special Conditions Section 01003.
 - B. Use adequate, trained and skilled workers who are thoroughly trained for fabrication and installation of fabricated materials in this section.
 - C. Comply with AM Welding Society - AWS D1.1 for welding work in this section.
- 1.03 SHOP DRAWINGS
 - A. Submit 4 sets of shop drawings of fabricated metal items as specified in this section for approval by the Architect.
- 1.04 HANDLING AND STORAGE
 - A. Use all means necessary to protect the materials of this section before, during and after installation. In the event of damage make all repairs and replacement at no cost to the Owner.

PART II - PRODUCTS

- 2.01 MATERIALS
 - A. For fabrication of work of this section to be exposed to view, use only those materials which are smooth and free from surface blemishes, roll marks, seams and roughness.
 - B. Standards - all materials shall comply with:
 - 1. Steel Plates, Shapes, Bars – ASTM A36
 - 2. Steel Tubing – ASTM A501.
 - 3. Steel Cold Rolled – ASTM A336.
 - 4. Castings Gray – ASTM A48.
 - C. Fasteners - Rough Hardware.
 - 1. Furnish all screws, bolts, washers, concrete anchors, sleeves, quick bolts, red heads or any other hardware item as needed for installation or fabrication as needed or reasonably implied by the drawings.
 - D. Painting - Lintels and all other miscellaneous metals shall arrive on the site with a prime coat of paint. All exposed metal will receive final painting in accordance with Division 9 of these specifications. Steel below grade shall be painted with asphalt paint. Aluminum items shall be mill finish or anodized as specified.
 - 1. Use shop paint red oxide, shop paint, or baked on enamel.
 - 2. Cold galvanizing paint for field touch-up work.
 - 3. After installation of fabricated metal touch-up with paint all field welds, scratches or abrasions with shop paint or cold galvanizing paint in the case of galvanized metal.
 - 4. Primer selected shall be compatible with finish paint.
 - E. Lintels & Shelf Angles – Provide all loose lintels, steel flats and/or shelf angles shown or necessary for the completion of the project.
 - F. Metal Plugs, Inserts – Where grounds are installed against masonry, provide galvanized metal nailing plugs, Milcor or equal, built-in as the work progresses.
 - G. Steel Angles, Straps & Anchor Bolts – Provide steel angles, straps and anchor bolts as shown or as may be necessary for completion of the project.
 - H. Insulation – Extreme care shall be taken to insulate dissimilar metals where they come in contact with each other. Methods and materials shall be approved by the Architect.
 - I. Toggle Bolts - Provide 3/8" toggle bolts for attachment to walls of wall-hung items such as cabinets.

2.02 FABRICATION

A. Workmanship:

1. Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in the finished product.
2. Work to dimensions shown or field measurements, using proven details of fabrication and support.
3. Use type of materials shown or specified for the various components of the work.
4. Form exposed work true to line and level, with accurate angles and surfaces and with straight sharp edges.
5. Ease the exposed edges to a radius of approximately 1/32" unless otherwise shown.
6. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
7. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush; match and blend with adjoining surfaces.
8. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, use Phillips flat-head (countersunk) screws or bolts.
9. Provide for anchorage of the type shown. Coordinate with supporting structure. Fabricate and space the anchoring devices to provide adequate support for intended use.
10. Cut, reinforce, drill, and tap miscellaneous metal work as indicated to receive finish hardware and similar items.
11. Paint steel and galvanized metal as specified in 2.01D.

PART III - EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which miscellaneous metal items are to be installed, and correct conditions which prevent proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Fastening to In-Place Construction – Provide anchorage devices and fasteners where necessary for securing miscellaneous metals to in-place construction including threaded fasteners for concrete inserts, toggle bolts, through bolts, lag bolts, wood screws, quick bolts, and other connectors as required.
- B. Cutting, Fitting, and Placement:
1. Perform cutting, drilling, and fitting as required.
 2. Set work accurately in location, alignment, and elevation, and make plumb, level, true, and free from rack, measured from established lines and levels.
 3. Provide temporary bracing or anchors in formwork for items to be built into concrete or similar construction.
 4. Fit exposed connections accurately together to form tight hairline joints.
 5. Field weld connections not to be left as exposed joints, but cannot be shop welded because of shipping size limitations.
 6. Grind exposed joints smooth, and touch up shop paint coat. Do not weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.
- C. Field Welding – Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of weld made, and methods in correcting welding work.
- C. Touch-up Painting – Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide minimum dry film thickness of 2.0 mils.

END OF SECTION

**SECTION 05720
ORNAMENTAL RAILINGS**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. SunRail Nautilus 1: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail, posts, and components ornamental railing system.
- B. SunRail Nautilus 2: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, posts, and components ornamental railing system.
- C. SunRail Access Easy: Pre-engineered, component-based, stainless steel handrail, posts, and components ADA railing system for Ramps and Stairs.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Requirements for placement of anchors or sleeves in concrete.
- B. Section 04220 – Concrete Masonry Units: Requirements for placement of anchors or sleeves in masonry.
- C. Section 05510 - Metal Stairs: Metal handrails other than those specified in this section.
- D. Section 05520 - Metal Handrails and Railings: Metal posts and handrails.
- E. Section 05710 - Decorative Metal Stairs.
- F. Section 13125 – Grandstands and Bleachers: Execution requirements for placement of anchors specified in this section in aluminum bleacher decking construction.

1.3 REFERENCES

- A. ASTM E 935 - Standard Test Methods for Permanent Metal Railing Systems and Rails for Buildings.
- B. ASTM E 985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.
- C. ASTM A 276 - Stainless Steel Bars and Shapes.
- D. ASTM A 312 - Seamless and Welded Austenitic Stainless Steel Pipes.
- E. ASTM A 314 - Stainless Steel Billets and Bars for Forging.
- F. ASTM A 554 - Welded Stainless Steel Mechanical Tubing.
- G. ASTM A 582 - Free-Machining Stainless and Heat-Resisting Steel Bars.
- H. ANSI A 1264.1 - Safety Requirements for Workplace Floor and Wall Openings, Stairs, and Railing Systems.
- I. ANSI/ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- J. 29 CFR 1910.23 - Guarding floor and wall openings; Occupational Safety and Health Administration.
- K. BOCA National Building Code; Building Officials and Code Administrators International, Inc.
- L. ICBO Uniform Building Code; International Conference of Building Officials.
- M. SBCCI Standard Building Code; Southern Building Code Congress International, Inc.
- N. ICC - International Code Council (2003 International Codes).

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide handrails and railings systems, including top rail, bottom rail, end posts, intermediate posts, cables, and cable hardware capable of withstanding the following structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors and connections in conformance with applicable codes:
 - 1. Top Rail of Guards: Shall withstand the following loads:
 - a. Concentrated load of 200 lbf (0.89kN) applied at any point and in any direction.
 - b. Uniform load of 50 lbf-ft (0.07kN-m) applied horizontally and concurrently with uniform load of 100 lbf-ft (0.14kN-m) applied vertically downward.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 - 2. Hand rails Not Serving As Top Rails: Shall withstand the following loads:
 - a. Concentrated load of 200 lbf (0.89 kN) applied at any point and in any direction.
 - b. Uniform load of 50 lbf-ft (0.07kN-m) applied in any direction
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 - 3. Guard Infill Area: Shall withstand the following loads:
 - a. Concentrated horizontal load of 200 lbf (0.89 kN) applied to 1 sq ft at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Loads need not be assumed to act concurrently with loads on top rails in determining stress on guard.
- B. Thermal Movements: Handrails and railings shall allow for movements resulting from 120 degrees F (49 degrees C) changes in ambient and 180 degrees F (82 degrees C) surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
- C. Corrosion Resistance: Separate incompatible materials to prevent galvanic corrosion.
- D. Manufacturer's structural calculations shall be prepared by a registered structural engineer.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300 - Submittals.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation instructions and methods.
 - 4. Description of materials, components, fabrication, and finishes.
 - 5. Structural computations and test reports provided by the manufacturer evidencing compliance with the specifications.
- C. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating materials, components, sizes, dimensions, tolerances, hardware, fasteners, finishes, options, accessories, and installation. Show details of attaching railing system to supports.
- D. Verification Samples: For each finish product specified, two samples, adequate in size, representing actual product, workmanship, and finishes.
 - 1. Railing frame components.
 - 2. Cables.
 - 3. Cable hardware.
- E. Assembly Samples: Provide assembled samples of railings sections, fabricated from full-size components, including top rail, post, handrail and infill and showing method of finishing intersections.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with

minimum five years documented experience.

- B. Installer Qualifications: Manufacturer's trained installers or an installer acceptable to the manufacturer
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Build railing systems mockups consisting of two posts, top rail, cables, and anchorage system components full height and not less than 24 inches (600 mm) in length.
 - 2. Locate in area designated by Architect.
 - 3. Do not proceed with remaining work until workmanship, and sheen are approved by Architect.
 - 4. Refinish mock-up area as required to produce acceptable work.
 - 5. Remove mock-up when no longer needed.
 - 6. Mock-up may remain as part of the Work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store products in clean, dry area indoors until ready for installation. Store materials in accordance with manufacturer's instructions.
- C. Protect materials and finish from damage during handling and installation.

1.8 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Verify actual openings by field measurements before fabrication; show recorded measurements on shop drawings.
- C. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.10 PRE-INSTALLATION MEETING

- A. Convene a pre-installation meeting approximately two weeks before start of fabrication of railing frame components and construction of railing frame component mounting surfaces. Require attendance of parties directly affecting work of this section, including Contractor, Architect, Fabricator, and Installer. Review the following:
 - 1. Specific method of installation of components into mounting surfaces.
 - 2. Installation, adjusting, cleaning, and protection of railing system.
 - 3. Coordination with other work.

1.11 COORDINATION

- A. Coordinate Work with other operations and installation of adjacent materials to avoid damage.

1.12 WARRANTY

- A. Provide manufacturer's standard 5-year materials warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Atlantis Rail, which is located at: 70 Armstrong Rd. ; Plymouth, MA 02360; Toll Free Tel: 800-541-6829; Tel: 508-732-9191; Fax: 508-732-9798; Email: [request info](#); Web: www.atlantisrail.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MATERIALS

- A. Stainless Steel Structural Tubing: ASTM A 554, Type 316, minimum tensile strength 70,000 psi; 2-inch (50 mm) diameter.
- B. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32-inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.

2.3 ORNAMENTAL RAILING SYSTEM

- A. SunRail Nautilus 1 System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail, posts, and components ornamental railing system.
 1. Guardrail Post: Stainless Steel Round Tube, 2-inch (50 mm) diameter, Type 316 stainless steel, 5-foot (1524 mm) O.C. maximum.
 - a. Height: 42 inch (1067 mm).
 - b. Height: 36 inch (914 mm).
 2. Stair Rail Post: Stainless Steel Round Tube, 2-inch (50 mm) diameter, Type 316 stainless steel, 36-inch (914 mm) rail height, 5-foot (1524 mm) O.C. maximum.
 3. Handrail: Stainless Steel Structural Tubing, 2-inch (50 mm) diameter, Type 316 stainless steel.
 4. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.
 5. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32-inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.
 - a. Orientation: Horizontal or as indicated on Drawings.
 - b. Spacing: 3-1/2 inches (89 mm) O.C.
 - c. Finish: Passivated.
 6. Turnbuckle Assemblies: RailEasy Turnbuckles, stainless steel turnbuckles with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles. Radius base fits two 2-inch (50 mm) diameter posts.
 - a. Radius base.
- B. Nautilus 2 System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, and vinyl components ornamental railing system.
 1. Post Sleeves: Vinyl, fits over 4 by 4 inch (100 by 100 mm) wood guardrail posts, white color. Wood guardrail posts specified in Section 06200.
 - a. Height: 42 inch (1067 mm).
 - b. Height: 36 inch (914 mm).
 2. Stair Rail Post: Vinyl, 36 inch (914 mm) rail height, 5-foot (1524 mm) O.C. maximum.
 3. Handrail: Stainless Steel Structural Tubing, 2-inch (50 mm) diameter, Type 316 stainless steel.
 4. Bottom Rail: Stainless Steel Structural Tubing, 2-inch (50 mm) diameter, Type 316 stainless steel.
 5. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.
 6. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32-inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.
 - a. Orientation: Horizontal.
 - b. Spacing: 3-1/2 inches (89 mm) O.C.
 - c. Finish: Passivated.
 7. Turnbuckle Assemblies: RailEasy Turnbuckles, stainless steel turnbuckles with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles.
 - a. Flat base.

- C. Sun Rail Access Easy System: Pre-engineered, component-based, stainless steel handrail, bottom rail, and posts ornamental railing system.
 - 1. Guardrail Post: Stainless Steel Round Tube, 2-inch (50 mm) diameter, Type 316 stainless steel, 4-foot (1219 mm) O.C. maximum.
 - a. Height: 42 inch (1067 mm).
 - b. Height: 36 inch (914 mm).
 - 2. Stair Rail Post: Stainless Steel Round Pipe, 2-inch (50 mm) diameter, Type 316 stainless steel, 36-inch (914 mm) rail height.
 - 3. Handrail: Stainless Steel Structural Tubing, 2-inch (50 mm) diameter, Type 316 stainless steel. Attached to 2 inch (50 mm) posts with specified connectors and appropriate spacing to comply with ADA Standards.
 - 4. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.

2.4 FABRICATION:

- A. Fabricate systems in accord with approved shop drawings and the manufacturer's instructions.
- B. Preassemble items in shop to greatest extent practicable to minimize assembly at project site. Disassemble units only to extent necessary for shipping and handling limitations. Mark units for reassembly.
- C. Field connections may be done using manufacturer's recommended methods.
- D. Use grommets, bushings and washers or methods as recommended by the manufacturer as necessary for separation of dissimilar metals.
- E. Coordinate fabrication of railing system components with related work under sections 06200 and 08800.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify field measurements are acceptable to suit stair assembly tolerances.
- C. Verify supports and anchors are correctly positioned.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Supply items required to be cast into concrete or embedded in masonry with setting templates, to appropriate Sections.
- B. Take field measurements after permanent end terminations are in place and prior to preparation of shop drawings and fabrication, to ensure fitting of work.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- D. Coordinate installation of railing system components with related work under sections 03300, 04220, 06200, 08800 and 13125.

3.3 INSTALLATION

- A. Install railing system in accordance with manufacturer's instructions.

- B. Install railing system plumb, level, square, true to line, and rigid.
- C. Ensure that wire ropes are parallel to each other, free of kinks, sags or other defects, and clean.
- D. Attach railing system securely in place using fasteners supplied or approved by manufacturer. Embedded anchor plates and supporting steel shall be provided by another trade and coordinated with the railing supplier.
- E. Anchor post in concrete and masonry by means of preset sleeves. After posts have been inserted into sleeves, fill space between post and sleeve solid as approved by manufacturer.
- F. Attach railing system to supports approved by manufacturer.
- G. Connect components with one part epoxy adhesive as approved by manufacturer.
- H. Use manufacturer's supplied hardware.
- I. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- J. Remove and replace defective or damaged components that cannot be successfully repaired as determined by Architect.

3.4 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean railing system promptly after installation in accordance with manufacturer's instructions.
- C. Do not use harsh cleaning materials or methods that would damage glass or finish.
- D. Do not use abrasive cleaners.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Replace defective or damaged components as directed by Architect.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 06100
ROUGH CARPENTRY

PART I - GENERAL

- 1.01 **WORK INCLUDED**
 - A. Furnish all labor, equipment materials for the complete installation of all rough carpentry, wood trusses and framing, plywood floor and roof sheathing, roof eave blocking, or other blocking and any other rough carpentry or framing as shown on the drawings.
 - B. Furnish and install all exterior wall sheathing as shown on drawings.
- 1.02 **RELATED WORK**
 - A. Section 04200 - Masonry.
 - B. Section 09250 - Gypsum Wallboard.
- 1.03 **QUALITY ASSURANCE**
 - A. Provide sufficient competent and skilled mechanics in accordance with accepted practices and supervisors who shall be present at all times during execution of this portion of the work, and who shall be thoroughly familiar with type of construction involved in this section and related work and techniques specified.
- 1.04 **PRODUCT DELIVERY, STORAGE AND HANDLING**
 - A. Immediately upon delivery to job site, place materials in area protected from weather.
 - B. Store materials a minimum of 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation or ventilation.
 - C. Do not store seasoned materials in wet or damp portions of building.
 - D. Protect fire-retardant materials against high humidity and moisture during storage and erection.
 - E. Protect sheet materials from corners breaking and damaging surfaces, while unloading.

PART II - PRODUCTS

- 2.01 **MATERIALS**
 - A. Lumber – Dimensions as shown on the drawings are nominal.
 - B. SYP (Southern Yellow Pine) #2, or better, or SPF (Spruce Pine Fir) #1 or better kiln dried to 15% max. moisture content shall be used for framing rough carpentry such as studs, blocking, bridging, plates, etc. All lumber shall be grade marked and shall also state that it is kiln dried to 15%.
 - C. Plywood Roof Deck and Upper Floor – Ext. DFPA-CD
 - 1. 5/8" square edge plywood w/clips at roof deck.
 - 2. 3/4" T. & G. plywood at upper floors
 - D. Furnish and install all rough hardware and metal fastenings shown, specified, or required for proper installation of work for framing and blocking. Nails, spikes, screws, bolts, toggle bolts, strap anchors and similar items shall be of sizes and types to support live and dead loads in accordance with NC State Building Code and to rigidly secure members in place.
 - 1. Truss and rafter tie downs shall be furnished and installed as shown on the drawings and shall be Simpson Strong Tie hot-dipped galvanized or an approved equal.
 - E. Permanent grounds shall be provided wherever required for proper nailing of finished carpentry. Grounds shall be #2 SPF (Spruce-Pine-Fir).
 - F. Pressure-treated wood shall be installed at fascia and all exterior blocking, exterior wood framing. Roof eave blocking and fascia blocking as shown on the drawings and shall be pressure treated in accordance with AWPI Standards LP-2 and LP-22 using waterborne salts and shall be dried after treatment to a maximum moisture content of 19%.
 - 1. Use LP-2 above ground (do not install in contact with earth)
 - 2. Use LP-22 for contact with concrete, earth or below grade.
 - G. Exterior sheathing on stud walls as shown on the drawings shall be 1/2" Ext. DFPA-CD plywood. Sheathing shall be a complete monolithic envelope of the building structure with no holes or gaps.
 - H. Construction Adhesive - Liquidnails for adhering plywood roof deck and flooring to wood trusses, rafters and floor joints respectively.

- I. Truss and Rafter Tie Downs - Simpson H-1 galvanized anchor - install each end of trusses and rafters and Simpson joist and jack truss hanger Type H or F heavy duty.
- J. Wood trusses shall be furnished and installed as shown on the drawings and in accordance with the latest revision of the National Design Specifications for Stress Grade Lumber and its Fastenings, the National Forest Products Association Design Specifications for Light Metal Plate Connected Wood Trusses and the Truss Plate Institute.
 - 1. Fabricate and design roof and floor trusses in accordance with the latest edition of "Design Specifications for Light Metal Plate Connected Wood Trusses-TPI" of the Truss Plate Institute. Submit design computations, shop drawings and load test data, sealed by the truss designer, to the Engineer for approval.
 - 2. Wood dimensions shown on drawings are nominal sizes, before dressing on four sides, u.o.n.
 - 3. Wood grade shall not permit visible knots.
 - 4. Steel shapes connecting wood members to be ASTM A36, u.o.n. and sized 200% larger than required.
 - 5. Where connecting hardware is shown on structural drawings, the types, size, spacing and alignment are critical and must be shown. Do not undercut wood. Pre-bore holes where required to prevent splitting. Connections must pull and hold members being joined in close contact.
 - 6. Design roof trusses for the following loads:

Top Chord - Dead Load	20 PSF
Top Chord - Live Load	20 PSF
Bot Chord - Dead Load	10 PSF
Wind Uplift (Net)	14 PSF

PART III - EXECUTION

3.01 INSPECTION

- A. Verify that surfaces to receive rough carpentry materials are prepared and are at proper elevations and of required dimensions.

3.02 INSTALLATION

- A. Blocking and Framing shall be carefully set to insure finish profiles as detailed on the drawings. Blocking necessary to secure items of finish carpentry or related items shall be accomplished under this section. Permanent grounds shall be provided wherever required to afford proper nailing of finishes.
- B. Store lumber so it is properly ventilated; held straight; well drained; protected from the elements; supported at points not over 4 feet apart with bottoms of piles at least 1-1/2" above basic support. i.e. ground, concrete, wood floor, etc. Store wood trusses vertically.
- C. Lay out work carefully; cut material to fit, level, plumb, and brace to hold work in proper position; drive nails and spikes home; and pull bolt nuts tight with heads and washers in close contact with the wood.
- D. Blocking, shall be at least 1 1/2" thick and of suitable width.
- E. Install double top plates at all walls. Stagger joints in top plates so a continuous tie is formed. All floor plates shall be pressure treated lumber LP22.
- F. Install 2"x 4" blocking cut between trusses at top and bottom chords as needed for nailing gypsum board at interior walls and ceilings.
- G. Plywood Roof Deck shall be installed in conformance with the following:
 - 1. Apply at right angles to main supports; locate end joints over supports; stagger end joints; before installing roof deck sheathing apply 2 ribbons of construction adhesive to the top chord of each truss. Apply deck and nail in place. Space nails 6" on center of all panel edges and 12" on center at intermediate supports.
 - 2. Protect deck from moisture by use of required waterproof covering as specified.
- I. Trusses - Furnish and install trusses as shown on the drawings. Truss Design shall be in accordance with and meeting the latest revisions of National Design Specifications for Stress Grade Lumber and its Fastenings of the National Forest Products Association and Design Specifications for Light Metal Plate Connected Wood Trusses of the Truss Plate Institute, T.P.I.
 - 1. Grade Mark shall be stamped on lumber in trusses.
 - 2. Furnish 4 sets of shop drawings for approval by the Architect before manufacturing. Shop drawings must contain stamp or seal of registered engineer.
 - 3. Trusses shall be constructed with pre-cut and carefully fitted members assembled to ensure uniformity. Trusses shall be constructed true to line and dimensions.

4. Each piece of lumber in the trusses shall be selected for suitability and cut to avoid large or unsound knots.
 5. Trusses shall be erected in position perpendicular to the wall plates. Except as otherwise specified, trusses shall be toe-nailed to top plates with 10d nails using 2 nails each side of each truss at each end. Install in addition to nails, two (2) truss tie downs, one at each side of each truss.
 6. Trusses shall be straightened by nailing temporary spacers to top and bottom chords before application of roof sheathing or gypsum ceiling.
 7. Bottom and top chords of trusses shall be tied together at top of bottom chord and at bottom of top chords with 1" x 4" at quarter points running full length of building.
- J. Framing, blocking, and plates shall be at least 1-1/2" inches thick and of suitable width. Provide the following:
1. Install horizontal blocking at midpoint of and between studs of same material as studs and double nailed each end.
 2. Double top plates at all walls and partitions. Staggered joints in top plates so a continuous tie is formed.
 3. Install 2' x 4' blocking cut between trusses bottom chords for nailing gypsum board at interior walls and ceilings.
- 3.03 GENERAL
- A. In addition to framing operations for fabrication and erection as shown on the drawings, install all backing as required for work of other trades, such as lavatories, urinals, panel boards, etc.
 - B. Set all horizontal or sloped framing with crown up.
 - C. Do not notch, bore, or cut members for pipes, conduit, ducts or other reasons except as shown on the drawings unless approved by the Architect.
 - D. Make all bearing full. Finish all bearing surfaces to give sure and even support. At slopes, cut or notch as required for full uniform bearing surface.

END OF SECTION

**SECTION 06200
FINISH CARPENTRY**

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish and install all finish carpentry and millwork as shown on the drawings.
- B. Millwork items shall include cabinet hardware, and steel supports.
- C. Millwork shall consist of the following items and as shown on the drawings:
 - 1. Door frames, wood base, moldings and trim.

1.02 RELATED WORK

- A. Section 06100 - Rough Carpentry
- B. Section 08211 - Wood Doors
- C. Section 09900 – Painting
- D. Section 09200 - Gypsum Wallboard System

1.03 QUALITY ASSURANCE

- A. All finish carpentry shall be executed by competent and skilled mechanics in accordance with the best accepted practices. Materials shall be carefully stacked, handled, and left clean and sound. Millwork shall be fabricated by an approved millwork manufacturer. Secret nail or screw and fasten with waterproof glue in accordance with the best accepted practices.
- B. Perform all finish carpentry and the fabrication of all millwork items in accordance with AWI Quality Standards. The quality standards of the AWI shall apply and by reference are made a part of this specification and section.
- C. Architectural woodwork as used in this Section and in the AWI Standards means: “All exposed wood, plywood and wood doors specified elsewhere are included”.
- D. Competence - The Architect reserves the right to approve the woodwork manufacturer selected to furnish all of the woodwork. The approved woodwork manufacturer must have a reputation for doing satisfactory work on time and shall have successfully completed comparable work.
- E. Job Assembled Work - The Contractor, when installing items not shop assembled, shall distribute to the best over-all advantage, the defects allowed in the quality grade specified.
- F. Field Dimensions - The woodwork manufacturer is responsible for details and dimensions and shall show on his shop drawings all required field dimensions. Field dimensions shall be taken prior to manufacturing the millwork.

1.04 SHOP DRAWINGS

- A. Furnish four (4) sets of shop drawings for all woodwork, with all required field dimensions shown for approval of the Architect.

1.05 HANDLING, PROTECTION AND STORAGE

- A. Finish woodwork shall be adequately protected from the weather while in transit from the place of fabrication and upon arrival at the job site.
 - 1. Store millwork in weather protected building.
 - 2. Store millwork off ground on concrete floors.
 - 3. No work will be installed in damp areas.
 - 4. Protect millwork from damage by other trade.
 - 5. All millwork items that are damaged shall be replaced at no cost to the Owner.

PART II - PRODUCTS

2.01 GENERAL

- A. Interior trim and door frames for painting shall be B & Better Southern Yellow Pine or Poplar of shapes and sizes as shown on the drawings.
 - 1. All surfaces to receive paint finish shall be sanded smooth.
- B. Interior millwork shall consist of concession area counters. All counter tops shall be plastic laminate as selected by the Architect.

SECTION 07111
SHEET MEMBRANE WATERPROOFING AND DRAINAGE

PART I – GENERAL

1.01 SUMMARY

- A. Section includes: Cold applied, self-adhering, rubberized asphalt sheet membrane waterproofing system, including substrate primer, sheet membrane, penetration flashing materials, mastics and prefabricated drainage composite for a single-source warranted system.
- B. Related Sections:
 - 1. Section 02200 – Earthwork
 - 2. Section 03300 – Cast In Place Concrete
 - 3. Section 04200 – Mortar & Unit Masonry
 - 4. Section 07920 – Sealant & Caulking

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and certificates of compliance for waterproofing and drainage system specified. Submit specimen copy of warranty specified herein.
- B. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including accessories for waterproofing and drainage system.
- C. Samples: Submit verification samples for waterproofing membrane and prefabricated drainage composites.

1.03 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced to perform work of this section, who has specialized in the installation of work similar to that required for this project, who can comply with manufacturer's warranty requirements.
 - 2. Manufacturer Qualifications: Manufacturer with a minimum of 10 years experience in site water management, capable of providing technical support in the application of the waterproofing and drainage system specified herein.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.
- C. Pre-Installation Testing: In accordance with manufacturer's recommendations and warranty requirements, conduct pre-installation testing of substrates to receive waterproofing.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Schedule deliveries to avoid construction delays but minimize jobsite storage.
- B. Storage and Protection: Store materials protected from exposure to harmful weather conditions. As recommended by manufacturer, store waterproofing materials at a temperature between 60 and 80 degrees F. If exposed to lower temperatures, restore materials to 60 degrees F. minimum temperature before application.

1.05 PROJECT CONDITIONS/SITE CONDITIONS

- A. Environmental Requirements/Conditions:
 - 1. Weather Conditions: Neither commence nor proceed with waterproofing application when surface temperature is below or inclement weather conditions conflict with manufacturer's published requirements.

1.07 WARRANTY

- A. Manufacturer's Warranty: Submit manufacturer's single source warranty directly from waterproofing/drainage system manufacturer for waterproofing system, including prefabricated drainage composites. Warranty Period: Commencing on Date of Substantial Completion.
 - a. Standard Waterproofing and Drainage Duration: 5 year material warranty.

PART II - PRODUCTS

2.01 MATERIALS

- A. Waterproofing Membrane System: MiraDRI 860/861 Rubberized Asphalt Waterproofing System (60 mils total minimum thickness) by TC MiraDRI Moisture Protection Products, 3500 Parkway Lane, Suite 500, Norcross, GA 30092, Tel. 1-888-464-7234.
- B. Accessory Products:
 - 1. Primer: MiraDRI All Weather Primer.
 - 2. Rubberized Asphalt Sheet Membrane: MiraDRI 860/861.
 - 3. Mastic: MiraDRI M-800 Mastic.
 - 4. Liquid Membrane: MiraDRI LM-800 Liquid Membrane.
- C. Geocomposite Sheet Drain: MiraDRAIN 6000XL and QuickDRAIN Prefabricated Drainage Composites by TC MiraDRI, MiraDRI Moisture Protection Products, 3500 Parkway Lane, Suite 500, Norcross, GA 30092, Tel. 1-888-464-7234.

2.02 SOURCE QUALITY CONTROL

- A. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions. Do not proceed with waterproofing and drainage system installation until substrate conditions are acceptable for compliance with manufacturer's warranty requirements.

PART III - EXECUTION

3.01 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions. Do not proceed with waterproofing and drainage system installation until substrate conditions are acceptable for compliance with manufacturer's warranty requirements.

3.02 PREPARATION

- A. Surface Preparation: Surfaces to receive waterproofing shall be dry, clean, frost free, and free of laitance, dust, dirt, oil, harmful curing compounds, or other foreign matter which may impair the bond or performance of the waterproofing and drainage system and which do not comply with manufacturer's warranty requirements.
- B. Surface preparation: Surfaces shall be smooth, free of depressions, voids, protrusions, clean and free of harmful curing compounds, form release agents and other surface contaminants which may impair the bond or performance of waterproofing and drainage system and manufacturer's warranty requirements.
- C. Adhesion Test: Determine substrate cleanability and acceptance by applying a test patch of membrane material to surface and check adhesion according to manufacturer's test procedures.

3.03 MEMBRANE INSTALLATION

- A. Primer: Apply primer to substrate in accordance with manufacturer's recommendations and warranty requirements. Let primer dry for approximately 30 minutes or when dry to the touch. Reprime surface if primed area has been left exposed for 24 hour.
- B. Substrate Preparation:
 - 1. Seal cracks (1/8" wide or less) with 60 mils minimum thick coat of MiraDRI LM-800 Liquid Membrane.
 - 2. Horizontal to Vertical Transitions and Footings: Apply a minimum 3/4" fillet of MiraDRI LM-800 at all inside horizontal corners and vertical to horizontal transition. Pre-strip vertical to horizontal transitions with 9" strips of MiraDRI Membrane.
 - 3. Interior and Exterior Corners: Pre-strip interior and exterior corners with 9" wide MiraDRI 860/861 membrane strip.
- C. Membrane Installation:
 - 1. Apply membrane to primed surfaces vertically, in sections of 8' in length or less. On walls higher than 8', apply two or more sections with upper section overlapping lower section with 5" minimum overlap. Side laps shall be a minimum of 2.5" and end laps shall be a minimum of 5". Use hand roller and

2.02 MATERIALS

- A. Plastic laminate counter tops shall be .050" thick and shall be glued with high pressure at the mill to a minimum ¾" thick exterior grade plywood backing.
- B. Color of plastic laminate for counter tops shall be selected, by the Architect, from Formica, Nevamar, Wilson Art or an approved equal.
- C. This contractor shall prepare holes as required in counter tops for sinks.
- D. Consult plumbing contractor for size and location of holes.
- E. Seal all edges of sink holes in counter tops.

PART III - EXECUTION

3.01 INSTALLATION

- A. Set and secure all materials and millwork items in place, plumb, and level.
- B. Anchors shall be installed where shown or as may be required to anchor carpentry to adjacent walls.
- C. Verify that all mechanical and electrical work and/or other items that may be affected by the installation of millwork are in place and ready to receive this work.

END OF SECTION

firmly press membrane when placed on vertical surface. For horizontal applications, use roller weighing a minimum of 75 lbs. to firmly press membrane onto surface without air pockets.

2. Apply a bead of MiraDRI M-800 Mastic at each termination of the membrane. Trowel bead to a flat surface approximately 1/8" thick by 3/4" wide. Work mastic into cut edge terminations.
3. Provide reglet or counter flashing where membrane terminates on a vertical surface above grade.
4. Seal laps occurring within 12" of a 90 degree change of direction with a trowled bead of MiraDRI M-800 Mastic.

3.04 DRAINAGE COURSE INSTALLATION

- A. Panel Installation: Place the flat core side against the substrate and filter fabric toward the overburden. Use MiraSTICK construction adhesive or MiraBOND tape to adhere geocomposite sheet drain to waterproofing membrane. Follow manufacturer's installation instructions.
- B. Connecting Adjacent Panels: Connect adjacent panels at the longitudinal edge by pulling the filter fabric back to expose the flange. The panel edge should be butted to the edge of the adjacent panel dimple to dimple or the edge of the next panel may be placed over two dimples and interlocked. Panel ends are to be attached in the same manner. Connections should be completed in shingle fashion so that moisture will flow with the overlap and not against it. Overlap fabric in the direction of water flow. Cover all terminal edges with the filter fabric flap by tucking in behind the core.
- C. Horizontal Applications: MiraDRAIN should be channeled into an internal drain or perimeter drain system. Caution should be taken not to place point loads on the MiraDRAIN that might puncture the filter fabric on the MiraDRAIN.

3.05 DISCHARGE CONNECTIONS

- A. Drainage:
 1. Foundation/Retaining Wall: Install QuickDRAIN prefabricated drainage collection system in a vertical foundation wall to a horizontal footing configuration. Adhere QuickDRAIN to the substrate using MiraSTICK contact adhesive or MiraBOND tape. Place the hinged portion of the QuickDRAIN against the vertical/horizontal transition and press into place. Connect adjacent panels by pulling filter fabric back to expose the flange. Overlap the flange of the core of edge drain on to the flange of the preceding drain core. Cover the joint with the filter fabric. Install MiraDRAIN in shingle fashion by overlapping the flange of the QuickDRAIN in the direction of water flow and cover with filter fabric. Cover all terminal edges of the core with the fabric flap by tucking behind the core.
 2. Discharge Connection Installation: Leaving the filter fabric in place, slide the QuickDRAIN Connector outlet over the horizontal portion of the QuickDRAIN and wrap with filter fabric.
 3. Where drain pipe is indicated, place the drain pipe next to the core. Wrap the drain pipe or rock/pipe drain combination with an auxiliary piece of filter fabric.

3.06 CLEANING AND PROTECTION

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove and legally dispose of construction debris from project site.
- B. Protection: Protect installed product's finished surfaces from damage during construction.

END OF SECTION

**SECTION 07150
DAMPROOFING**

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish and install vapor barrier under interior floor slabs on grade.
- B. Furnish and install copper armored flashing at head & sills of windows, doors and at bottom of wall cavity.
- C. Cavity wall vapor barrier.

1.02 RELATED WORK

- A. Section 03300 – Concrete
- B. Section 04200 - Masonry

PART II - PRODUCTS

2.01 MATERIALS

- A. Vapor Barrier – “Moistop Underslab” as manufactured by Fortifiber Corporation of Attleboro, MA, or an approved equal. Moistop Underslab is approx. 12 mils thick and is constructed of two layers of black polyethylene sheeting bonded together with fiberglass reinforcing.
- B. Copper Armored Flashing - 3 oz. copper bonded to waterproofed Kraft paper and reinforced with glass fibers.
- C. Mastic - Weathered fibrated asphalt cement.
- D. Exterior wall and/or cavity wall Vapor Barrier - 15 lb. non-perforated asphalt felt.

PART III - EXECUTION

3.01 INSTALLATION

- A. All floor slabs on grade shall receive one layer of reinforced polyethylene sheeting, as specified in 2.01A above applied to compacted soil before placing concrete slab.
 - 1. All edges shall be lapped 4” and sealed with cold cement and tape.
 - 2. All protrusions and holes through the vapor barrier shall be sealed with cold cement and tape.
 - 3. Protrusions and holes shall include pipe, conduit, stakes, construction traffic holes, and any other protrusions or holes that break the continuity of the vapor barrier. Turn up vapor barrier 4” at all walls or partitions.
- B. At heads and sills of all windows, and exterior doors through wall flashing, and at bottom cavity walls at weep holes, 3 oz. copper Armored flashing shall be installed as shown on the drawings. All laps shall be sealed with weatherized fibrated cement. Laps shall be 6”.
 - 1. Copper Armored flashing shall be stapled and sealed with mastic to gypsum board sheathing before extending sisalkraft into heads or sills of windows or heads of doors at through wall flashing and at cavity walls. Form dam at ends of flashing at window and door heads.
 - 2. Apply mastic to sheathing before stapling copper armored flashing to sheathing.
- C. Install exterior wall vapor barrier at exterior side of sheathing consisting of one layer of 15 lb. felt installed horizontally starting at bottom of cavity and proceeding to the top with each succeeding layer overlapping the first layer so as to shed water - attach to studs through tin discs.

END OF SECTION

**SECTION 07210
BUILDING INSULATION**

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, material, and necessary equipment for the installation of insulation as specified in this section and as shown on the drawings.
- B. Insulation shall be installed as follows:
 - 1. Foundation Perimeter.
 - 2. Exterior Wood Stud Walls.
 - a. At exterior walls, ceiling to roof install insulation with non-combustible vapor barrier when insulation is not covered or encapsulated with gypsum board.
 - 3. Interior walls and ceilings as shown on drawings.
 - 4. Attic space at trusses and as shown on the drawings.

1.02 PRODUCT HANDLING AND STORAGE

- A. All insulation shall be protected before, during and after installation and shall be protected from work of other trades.
- B. Deliver insulation materials to the job site and store in a safe dry place. All insulation shall be adequately covered to protect it from moisture or rain.
- C. In the event that insulation is damaged, make all repairs or replace at no cost to the Owner.

PART II - PRODUCTS

2.01 MATERIALS

- A. Foundation Perimeter below slab – 1” Styrofoam SM or approved equal, extruded polystyrene rigid board. K-value of .185 and maximum absorption of .7%. Compressive strength 25 min. P.S.I. (typical 30 P.S.I.). ASTM - C 578 Type IV. No Bead Board will be acceptable.
- B. Exterior Masonry walls – Vermiculite insulating fill
- C. Interior Walls - Sound Attenuation Blankets, where shown on drawings - Paperless 4” fiberglass or rockwool insulation minimum 3.5 lb./cu. ft. density.
- D. Attic Space – R-30 fiber glass batt insulation @ bottom chords of trusses.

PART III - EXECUTION

3.01 INSTALLATION

- A. Foundation
 - 1. Foundation insulation shall be installed from top of the floor slab to a depth as shown on the drawings.
 - 2. Insulation shall be placed in cavity between concrete masonry and brick veneer at foundation walls.
 - 3. Care shall be taken not to puncture or dislodge the perimeter insulation during subsequent building operations.
- B. Exterior Wall Insulation
 - 1. Furnish and install R-19 paper faced fiberglass batt insulation in the exterior wood stud walls as shown on the drawings.
 - 2. Insulation shall be held in place and not allowed to “slump” between studs with staples applied to wood studs.
 - 3. Insulation not covered with gypsum board shall have non-combustible foil faced.
 - 4. All joints in batt insulation shall be taped together to provide tight closed joint. All holes shall be taped.
 - 5. All holes, voids or spaces shall be filled with insulation.
 - 6. Insulation shall be installed on exterior side of electrical boxes or plumbing lines.
 - 7. All insulation shall be installed in accordance with the NC State Building Code and the County or City having jurisdiction.

- C. Interior Sound Insulation
 - 1. Install sound attenuation blankets as specified in this section in all interior walls located on the upper level only.
 - 2. Employ the use of staples, wire mesh, or hardware cloth to install sound blankets between studs to prevent insulation from “slumping” or slipping down in wall cavities.
 - D. Furnish and install R-30 fiberglass batt insulation at bottom chord of trusses as shown on the drawings.
 - 1. All insulation shall fit tight together with no holes or voids between batts.
 - 2. Fill all holes, voids or spaces with insulation.
 - 3. All insulation in attic spaces shall be installed in accordance with NC State Building Code and the County or City having jurisdiction.
- 3.02 CLEANUP
- A. Remove all debris and particles of insulation from the site daily.

END OF SECTION

SECTION 07310
SHINGLES

PART I - GENERAL

- 1.01 WORK INCLUDED
 - A. Furnish all labor, materials, equipment and related services required for the complete installation of fiberglass shingles as shown on the drawings and as specified in this section. Nails for shingles shall be special nails as specified below.
 - B. Roofing and flashing shall be weather tight, free from leaks and other defects.
 - C. Furnish and install ice and water barrier at:
 - 1. Ridges of sloped roofs
 - 2. Eaves of sloped roofs
 - 3. Roof valleys
- 1.02 RELATED WORK
 - A. Section 06100 - Rough Carpentry
- 1.03 SHOP DRAWINGS
 - A. Furnish shingle literature for approval by the Architect before installation.
- 1.04 DELIVERY, STORAGE & HANDLING
 - A. All shingles shall be delivered to the site in unopened containers.
 - B. Cover all materials and protect from weather.
 - C. Do not allow materials to get wet. All wet materials shall be replaced at no cost to the Owner.
 - D. Store roofing materials off ground on wood pallets or in a building or trailer.
 - E. Pipe flashing: Lead or rubber boot pipe flashings around pipes through roof areas and flue flashing will be furnished by other Contractors and shall be installed by this Contractor to the extent that roofing around pipes shall be watertight.
- 1.05 SAMPLES
 - A. Furnish samples of all shingle colors available from the selected manufacturer for color selection by the Architect.

PART II - PRODUCTS

- 2.01 ACCEPTABLE MANUFACTURERS
 - A. Timberline 30 yr. Dimensional Shingles as manufactured by GAF Materials Corp. or an approved equal.
- 2.02 MATERIALS
 - A. Asphalt saturated felt 30# (install one (1) layer over all roof surfaces to receive shingles). Felt shall be unperforated organic roofing felt ASTM D226.
 - B. Shingles:
 - 1. 12" x 36" UL rated Class "A" external fire exposure label.
 - 2. 5" Exposure and self sealing (seal down).
 - 3. 4 Nails per shingle.
 - C. Ice and Water Barrier - Grace Ice & Water Shield or Weather Watch by GAF. Ice and water shield shall be a Polymer modified asphalt reinforced with fiberglass mat and self adhesive backing for bonding to plywood roof deck.
 - D. Nails - Large Head Galvanized Roofing Nails with annular rings at shank.
 - E. Plastic Roofing Cement.
 - F. Flashing – All flashing shall be aluminum.
 - G. Eave strip to be copper.

PART III - EXECUTION

- 3.01 INSPECTION AND PREPARATION
 - A. All roof defects such as decking out of alignment, raised or protruding uneven deck or any roof deck that will prevent the flat installation of felt and shingles shall be corrected and replaced before the installation of felt and fiberglass shingles.

3.02 INSTALLATION

- A. Shingles shall be installed in accordance with the manufacturer's latest printed instructions.
- B. Install aluminum eave strip.
- C. Install ice and water shield 36" wide at all ridges (18" each side). At all valleys and at all eaves at sloping shingled roofs full width 36". Install ice and water shield directly to plywood roof deck.
- D. Install asphalt felt underlayment - cover roof deck with one layer of unperforated 30# asphalt saturated felt, laid with 3-inch horizontal lap joints; double felts at ridges. Nail felt to shingle nail base with nails through metal discs as specified at 12" centers. Felt shall be applied over eave strips.
- E. Install Shingles as follows as recommended by the manufacturer.
 - 1. Shingles shall be laid with true horizontal and vertical lines with not more than 5" exposure and not less than 2" headlap.
 - 2. Ridges shall be rectangular shingles so as to have equal exposure, not less than 5", on each side and laid with not less than 2" headlap.
 - 3. Install shingles over edge member at eaves. These strips shall be not less than 5" wide, nailed to deck at 8" centers along upper edge of metal and bent down to form a drip on outer edge as shown on the drawings.
 - 4. Drive nails flush to shingles. Do not penetrate shingles.

3.03 CLEANUP

- A. After completion of roofing remove from the site all roofing debris such as paper wrappers, metal bands, roofing felt or any other device or equipment or materials associated with the installation of shingles.

3.04 GUARANTEE

- A. Provide owner with the manufacturer's written guarantee of shingles for warranty on product.

END OF SECTION

**SECTION 07460
SIDING**

PART I - GENERAL

- 1.01 WORK INCLUDED
 - A. Furnish all labor, materials, equipment and related services required for the complete installation of soffit and related work as shown on the drawings and as specified in this section.
- 1.02 RELATED WORK
 - A. Section 06100 – Rough Carpentry
- 1.03 DELIVERY, STORAGE & HANDLING
 - A. All siding shall be delivered to the site and stacked on edge or laid flat on a smooth level surface.
 - B. Protect all edges and corners from chipping.
 - C. Cover all materials and keep dry prior to installation.
 - D. Do not allow materials to get wet. All wet materials shall be allowed to dry thoroughly before installing.
- 1.04 SAMPLES
 - A. Furnish samples, as required, of all available surface textures for selection by the Architect.

PART II - PRODUCTS

- 2.01 ACCEPTABLE PRODUCTS
 - A. Vinyl siding and accessories shall be as manufactured by CertainTeed Corporation or an approved equal.
- 2.02 MATERIALS
 - A. Vinyl siding, soffit and fascia are extruded polyvinyl chloride (PVC) and shall comply with the provisions of ASTM D3679 Rigid Polyvinyl Chloride Plastic Siding. Siding and accessories shall be provided in types and colors as selected by the Architect and as follows:
 - 1. Siding and trim shall have a low gloss finish with color molded throughout panels and shall have a natural texture molded from real cedar shingles. Colors shall be selected from manufacturer's standard colors.
 - 2. Siding shall be injection molded of .100" nominal thickness with ribbed back for structural stability, tested and designed to withstand wind load pressures up to 180 mph.

PART III - EXECUTION

- 3.01 INSPECTION AND PREPARATION
 - A. Prior to commencing work, verify all governing dimensions of the building; examine, clean and repair, if necessary, any adjoining structure/material on which this work is in any way dependent for its proper installation. Sheathing materials must have an acceptable working surface.
- 3.02 INSTALLATION
 - A. Siding shall be installed in strict accordance with the manufacturer's latest printed instructions and the requirements of the NC Building Code.
- 3.03 CLEANUP
 - A. After completion, remove all debris, devices, equipment or materials associated with the installation of siding.
- 3.04 WARRANTY
 - A. Provide owner with a written copy of the specified Manufacturer's Lifetime Limited Warranty.

END OF SECTION

SECTION 07610 Metal Roofing

PART 1 - GENERAL

1.01 DESCRIPTION

A. General:

1. Furnish all labor, material, tools, equipment and services for all preformed roofing, metal building fascia and trim as indicated, in accord with provisions of Contract Documents.
2. Completely coordinate with work of all other trades.
3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.
4. See Division 1 for General Requirements.

B. Related Work Specified Elsewhere:

1. Structural steel: Section 05100.
2. Flashing and sheet metal: Section 07600.

1.02 QUALITY ASSURANCE

A. Applicable Standards:

1. SMACNA: "Architectural Sheet Metal Manual", Sheet Metal and Air Conditioning Contractors National Association, Inc.
2. LGSI: "Light Gage Structural Institute"
3. AISC: "Steel Construction Manual", American Institute of Steel Construction.
4. AISI: "Cold Form Steel Design Manual", American Iron and Steel Institute (1996 Edition).
5. UL580: "Tests for Uplift Resistance of Roof Assemblies", Underwriters Laboratories, Inc.
6. FM: "Test Requirements for Class 1 panel roofs", Factory Mutual Research Corporation.
7. UL2218: Class 4 Impact Resistance Rating
8. Dade County (Florida) Acceptance Report Numbers 01-0814.04 (Dated 12/10/06) and 00-0501.08.
9. ICBO: Evaluation Report No. ER-5409, ICBO Evaluation Service, Inc.
10. ASTM E 1592-95: "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference", American Society for Testing and Materials.
11. ASTM E 1680-95: "Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems, American Society for Testing and Materials.
12. ASTM E 1646-95: "Standard Test Method for Water Penetration Through Exterior Metal Roof Panel Systems, American Society for Testing and Materials.
13. ASTM A 792-83-AZ50 (Painted) & ASTM A792-83-AZ55 (Bare Galvalume Plus®): "Specifications for Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process, General Requirements (Galvalume®)", American Society for Testing and Materials.
14. ASTM E 1514-93: "Standard Specification for Structural Standing Seam Steel Roof Panel Systems", American Society for Testing and Materials.
15. ASTM E 408-71: Standard Test Method for Total Normal Remittance of Surfaces Using Inspection- Meter Techniques. (Energy Star® for Roof Products).
16. ASTM E 903-96 Standard Test Method for Solar Absorptions, Using Integrating Spheres. (Energy Star® for Roof Products)

B. Manufacturer's Qualifications:

1. Manufacturer has a minimum of five years experience in manufacturing metal roof systems of this nature. Panels specified in this section shall be produced in a factory environment (not with a portable roll former) with fixed-base roll forming equipment and in line leveling, assuring the highest level of quality control. A letter from the manufacturer certifying compliance will accompany the product material submittals.

C. Installation Contractor's Qualifications:

1. Installation contractor shall be an approved installer, certified by the manufacturer before the beginning of installation of the metal roof system, specifically for MBCI's **SuperLok®** metal roof system, Certification by manufacturer must include the following:
 - a. Maintain \$250,000 minimum general liability insurance coverage. Maintain statutory limits of worker's compensation coverage as mandated by law.
 - b. Have no viable claims pending regarding negligent acts or defective workmanship on previously performed or current projects.
 - c. Has not filed for protection from creditors under any state or federal insolvency or debtor relief statutes or codes.
 - d. Project foreman is the person having received certification by the manufacturer specific training in the proper installation of the selected metal roof system and will be present to supervise whenever material is being installed. Specific certified installer program shall include the following:

1. The instructor must have a minimum of 10 years' experience in the application of metal roof systems.
 2. A formal syllabus for the classroom and hands-on training.
 3. Classroom instruction with review and thorough understanding of the specific product's technical manual.
 4. Hands-on mock-up instruction with a review and thorough understanding of the specific product's details.
 5. The installation contractor must pass a written and oral exam.
- e. Provide five references from five different architects or building owners for projects that have been in service for a minimum of two years, stating satisfactory performance by the installation contractor.
- f. Provide certification letter that installation contractor has a minimum of three years' of metal product installation experience immediately preceding the date upon which work is to commence.

D. Pre-Installation Conference:

1. Prior to installation of roofing system, conduct a pre-installation conference at the project site.
2. Attendance: Owner, Architect, Contractor, Project Superintendent, and Certified Installer
3. Agenda:
 - a. Roofing details and agenda
 - b. Critical work sequencing and review of phasing plan
 - c. Inspection sequencing

1.03 SYSTEM PERFORMANCE REQUIREMENTS

A. Performance Testing:

1. Metal roof system must be tested in accordance with **Underwriters Laboratories, Inc. (UL) Test Method 580** "Tests for Uplift Resistance of Roof Assemblies".
2. Metal roof system must be installed in accordance with UL Construction method 90 (min. 16 gauge purlin, 5'-0 1/16" on center max. with low/high fixed/floating clips without light Transmitting Panels)
3. Metal roof system must be installed in accordance with **Factory Mutual Research Corporation (FMRC) Standard 4471** and for Hail Damage, Fire Resistance and Wind Uplift.
Metal roof system must be installed in accordance with FMRC tested procedures yielding **Class 1-105** (16 in. 22 ga. panel, using floating clips spaced 5'-0" O.C. installed over 16 ga. Purlins)
4. Metal roof system must be tested in accordance with ASTM E 1592-95 for negative loading. Determine panel bending and clip-to-panel strength by testing in accordance with ASTM E 1592-95 procedures. Capacity for gauge, span or loading other than those tested may be determined by interpolating between test values only.
5. Metal roof system must meet the air infiltration requirements of ASTM E 1680-95 when tested with a 6.24 PSF pressure differential. The resulting air infiltration leakage rate will be a minimum of 16" SuperLok®)-(0.007cfm / sq. ft.)
6. Metal roof system must meet the water penetration requirements of ASTM E 1646-95 when tested with a 12.00 PSF pressure differential with no uncontrollable water leakage when five gallons per hour of water is sprayed per square foot of roof area.
7. Metal Roof Panels shall be high reflectance and high emittance. Initial Reflectance (Galvalume Only) shall be at least 0.68 when tested to ASTM E - 903. The three year aged reflectance shall be at least 0.57, when tested in accordance with ASTM E-1918 (Measured As Solar Reflectivity, Not Visible Reflectance).

1.04 DESIGN REQUIREMENTS

A. Roof Design Loads:

1. Design criteria shall be in accordance with the most current version of North Carolina State Building Code (Amended IBC)
2. Dead Loads
 - a. The dead load shall be the weight of the SSMR system. Collateral loads, such as sprinklers, mechanical and electrical systems, and ceilings shall not be attached to the panels.
3. Live Loads
 - a. The panels and concealed anchor clips shall be capable of supporting a minimum uniform live load of 20 psf.
4. Roof Snow Loads
 - a. The design roof snow loads shall be 10 lbs /sq ft.
5. Wind Loads
 - a. The design wind uplift pressure for the roof system shall be 14 lbs/ sqft. The design uplift force for each connection assembly in shall be that pressure given for the area under consideration, multiplied by the tributary load area of the connection assembly. The safety factor listed below shall be applied to the design force and compared against the ultimate capacity. Prying shall be considered when calculating fastener design loads.
 - aa. Single fastener in each connection:.....3.00
 - bb. Two or more fasteners in each connection:.....2.25
6. Thermal Loads Roof panels shall be free to move in response to the expansion and contraction forces resulting from a total temperature range of of -40 to 120 degrees F during the life of the structure.

B. Framing Members Supporting the SSSMR System

1. Any additions/revisions to framing members supporting the SSMR system to accommodate the manufacturer/fabricator's design shall be the Contractor's responsibility and shall be submitted for review and approval. New or revised framing members and their connections shall be designed in accordance AISC design specifications. Maximum deflection under applied live load, snow or wind load shall not exceed L/240 of the span length.

1.05 SUBMITTALS

A. Shop drawings:

1. Submit complete shop drawings and erection details, approved by the metal roofing manufacturer, to the architect (owner) for review. Do not proceed with manufacture of roofing materials prior to review of shop drawings and field verification of all dimensions. Do not use drawings prepared by the architect (owner) for shop or erection drawings.
 2. Shop drawings show methods of erection, roof and wall panel layout, sections and details, anticipated loads, flashings, sealants, interfaces with all materials not supplied and proposed identification of component parts and their finishes.
- B. Performance Tests:**
1. Submit certified test results by a recognized testing laboratory or manufacturer's lab (witnessed by a professional engineer) in accordance with specified test methods for each panel system.
- C. Calculations:**
1. Submit engineering calculations defining all cladding loads for all roof areas based on design criteria listed in Para 1.04 Design Requirements, allowable clip loads and required number of fasteners to secure the panel clips to the designated substructure.
 2. Compute uplift loads on clip fasteners with full recognition of prying forces and eccentric clip loading.
 3. Calculate holding strength of fasteners in accordance with submitted test data provided by the fastener manufacturer based on length of embedment and properties of materials.
 4. Submit thermal calculations and details of floating clip, flashing attachments, and accessories certifying the free movement in response to the expansion/ contraction forces resulting from a total temperature differential of 110 degrees F.
- D. Samples:**
1. Submit samples and color chips for all proposed finishes.
 - a. Submit one 8-inch long sample of panel, including clips.
 - b. Submit two 3 inches x 5 inch color chip samples in color selected by the architect (owner).
- E. Warranties:**
- Metal roof system manufacturer shall submit specimen copy of the warranty upon final acceptance for project, furnish a warranty
1. **Finish Warranty:**
 - a. Covering bare metal against rupture, structural failure and perforation due to normal atmospheric corrosion exposure for a period of 20 years.
 - b. Covering panel finish against cracking, checking, blistering, peeling, flaking, chipping, chalking and fading for a period of twenty (20) years for bare Galvalume roof panels
 2. **Weather-tightness Warranty:**
Metal roof system manufacturer shall submit specimen copy of manufacturer's: Weather-tightness Warranty, including evidence of application for warranty and manufacturer's acceptance of the applicator and warranty conditions.
Standard Warranty
- F. Test Reports:**
1. Submit Test Reports showing that metal panels have been tested in accordance with the Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference of ASTM E 1592-95.
 2. Metal roof system must meet the air infiltration requirements of ASTM E 1680-95 when tested with a 6.24 PSF pressure differential. The resulting air infiltration leakage rate will be a minimum of 16" SuperLok®-(.007 cfm/sq. ft.).
 3. Submit Test Reports showing that metal panels meet the water penetration requirements of ASTM E 1646-95 when tested with a 12.00 PSF pressure differential with no uncontrollable water leakage when five gallons per hour of water is sprayed per square foot of roof area.
 4. Submit Evaluation Report No. ER-5409 showing that metal panel system details, engineering calculations, computer printouts, and data have been examined by the ICBO Evaluation Service, Inc. and have been found to comply with the 1997 Uniform Building Code.
- G. Metal Roof System Fabrication Certification:**
1. Submit a letter from the metal roof system manufacturer certifying the **SuperLok®** panels have been produced in a factory environment (not job site roll formed) with fixed-base roll forming equipment and in line leveling
- H. Certified Installers Qualifications:**
1. Submit certificate from manufacturer certifying that installer of the metal roof system has met all of the criteria outlined in "1.02 C. Installer's qualifications" and is an authorized installer certified by the manufacturer.
 2. Submit the formal syllabus for the classroom and hands-on training.
 3. Submit five references from five different architects or building owners for projects that have been in service for a minimum of two years, stating satisfactory performance by the installation contractor.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery:**
1. Deliver metal roof system to job site properly packaged to provide protection against transportation damage.
- B. Handling:**
1. Exercise extreme care in unloading, storing and erecting metal roof system to prevent bending, warping, twisting and surface damage.
- C. Storage:**
1. Store bundled sheets off the ground sufficiently high enough to allow air circulation beneath bundle and to prevent rising water from entering bundle. Slightly elevate one end of bundle. Prevent rain from entering bundle by covering with tarpaulin, making provision for air circulation between draped edges of tarpaulin and the ground. **Prolonged Storage of sheets in a bundle is not recommended.** If conditions do not permit immediate erection, extra care should be taken to protect sheets from staining or water marks.

1.07 WEATHER-TIGHTNESS WARRANTY

- A. The Contractor shall provide to the Owner, a Standard warranty signed by the roofing manufacturer of the Standing Seam Roof System as outlined below:
- B. Standard Warranty:
1. For a period of ten (10) years from the date of substantial completion, the roofing manufacturer WARRANTS to the Building Owner ("Owner"): that the roofing manufacturer's furnished roof panels, flashing, and related items used to fasten the roof panels and flashing to the roof structure ("Roof System") will not allow intrusion of water from the exterior of the roofing manufacturer's Roof System into the building envelope, when exposed to ordinary weather conditions and ordinary wear and usage. The date of substantial completion is the date that is certified by the Architect, Owner, or Owner's Representative, when the roofing manufacturer's Roofing System is completed and accepted by or on behalf of the Owner.
 2. The Roofing Installer shall have the sole and exclusive obligation for all warranty work commencing on the date of substantial completion up to and until the roof system has performed leak free for (24) consecutive months. The sole and exclusive obligation for all warranty work commencing on the date the roof has been leak free for (24) consecutive months and under all circumstances terminates [# insert # of years]. Year anniversary of the date certified as substantial completion of the roofing manufacturer's roof system.
 3. **Roofing Manufacturer's Liability**
The total liability of the roofing manufacturer under **Standard warranty is Standard I**, Limited solely to \$.20 sq. ft. of the actual roof area.

PART 2 - PRODUCTS

1. Architectural structural standing seam metal roof system; minimum slope of 1/2:12

2.01 MATERIALS

- A. **Metal Roof System Profile:**
1. 2 inch high x 3/8" to 1/2" inch wide rib x 16 inch wide, striated panel.
- B. **Metal Roof System Style:**
1. Vertical leg, concealed fastener, standing seam, utilizing male and female rib configurations, with factory applied hot-melt mastic in female rib, continuously locked together by an electrically powered mechanical seaming device during installation.
- C. **Gauge:**
1. (24 gauge) (UL90 rated - Underwriters Laboratories)
- D. **Substrate:**
1. Galvalume® steel sheet, minimum yield of 50,000 PSI.
- E. **Clip:**
1. Two piece floating clip, 18 gauge base, 24 gauge top, with factory applied mastic (# UL-90 rated - Underwriters Laboratories).
- F. **Texture:**
1. Embossed with striations (minimizes oil canning)
- G. **Finish:**
- H. **Color For Eave, Trims, Gutters, and Downspouts:**
1. Selected from Energy Star® Rated metal roof system manufacturer's standard offering.
- I. **Acceptable Manufacturer:**
1. MBCI - Houston, TX - (281) 445-8555.
 2. Approved equal.
- J. **Other manufacturers desiring approval comply with Section 01630.**
- K. **Acceptable Curb and Equipment Support units:**
1. LM Curbs - Longview, TX.
- L. **Prefabricated Roof Jacks:**
1. SFS - iNTECH - Wyomissing, PA.
 2. ITW Buildex - Itasca, IL.
- M. **Rooftop Walkways:**
1. LM Curbs - Longview, TX.

2.02 MISCELLANEOUS MATERIALS

- C. **Fasteners:**
1. All self-tapping/self-drilling fasteners, bolts, nuts, self-locking rivets and other suitable fasteners shall be designed to withstand specified design loads.
 2. Use long life fasteners for all interior and exterior metal roof system applications.
 3. Provide fasteners with a factory applied coating in a color to match metal roof system application.
 4. Provide neoprene washers under heads of exposed fasteners.
 5. Locate and space all exposed fasteners in a true vertical and horizontal alignment. Use proper torque settings to obtain controlled uniform compression for a positive seal without rupturing the neoprene washer.
- B. **Accessories:**
1. Provide all components required per the metal roof system manufacturer's approved shop drawings for a complete metal roof system to include panels, panel clips, trim/flashing, fascias, ridge, closures, sealants, fillers and any other required items.

- a. All outside closures will be fabricated from Galvalume Plus® or Pre-Painted Galvalume® sheet steel of the same gauge, finish and color as the panels.
- b. All tape seal is to be a pressure sensitive, 100 percent solids, polyisobutylene compound sealing tape with a release paper backing. Provide permanently elastic, non-sagging, non-toxic, non-staining tape seal approved by the metal roof system manufacturer.
- c. All joint sealant is to be a one-part elastomeric polyurethane sealant approved by the metal roof system manufacturer.

2.03 FABRICATION

- A. Material shall be in-line leveled prior to roll forming panel profile.
- B. Where possible, roll form panels in continuous lengths, full length of detailed runs.
- C. Standard panel length shall be no more than 50 feet long (for longer length availability, contact manufacturer).
- D. Fabricate trim/flashing and accessories to detailed profiles.
- E. Fabricate trim/flashing from same material as panel.

2.04 PREFABRICATED CURBS AND EQUIPMENT SUPPORTS

- A. Comply with loading and strength requirements as indicated where units support work of other trades. Coordinate dimensions of curbs and supports with equipment supplier/manufacturer.
- B. Fabricate curbs of structural quality aluminum (Min. .080 in. thickness for mechanical gear up to 1000 lbs.; .125 in. thickness for mechanical gear between 1000 lbs. and 2000 lbs.; use a two curb system per the manufacturer above 2000 lbs.), factory primed and prepared for painting with mitered and welded corner joints. Provide integral base plates and water diverter crickets. The upper flange of the curb must be a minimum of 18" above the water diverter. (This allows 12" of free area after the panel is lapped over the flange on the high side.) Curbs shall be designed to install under metal roof system on the high side and over metal roof system on the low side.
- C. Minimum height of prefabricated curb will be 8 inches above the finished metal roof system.
- D. Curbs shall be constructed to match the slope of the roof and provide a level top surface for mounting equipment.
- E. Curb flanges must be constructed to match the configuration of the metal roof panels.
- F. Curb manufacturer will provide their own curb structural support system that can be installed between the purlins that will allow proper thermal movement of the curb with the roofing system.
- G. Submit roof curb manufacturer's shop drawings to metal roof system manufacturer for review prior to fabrication (refer to metal roof system manufacturer's standard installation details). Metal roof system manufacturer will review roof curb manufacturer's shop drawings for compatibility with metal roof system.

2.05 PREFABRICATED ROOF JACKS

- A. Pipe flashings shall be a one piece [# choose one: EPDM (ethylene propylene diene monomer) molded rubber boot having a serviceable temperature range of -65°F to 212°F (for standard applications) or silicone molded rubber boot having a serviceable temperature range of -100°F to 437°F (for high temperature applications)] and shall be resistant to ozone and ultraviolet rays. Units shall have an aluminum flanged base ring. **Do not install pipe flashings through any panel seams - install ONLY in the flat portion of the panel.**

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- B. **Examination:**
 1. Inspect installed work of other trades and verify that such work is complete to a point where this work may continue.
 2. Verify that installation may be made in accordance with approved shop drawings and manufacturer's instructions. This specifically includes verifying that secondary structural members and/or decking are installed to meet UL and building code requirements. Coordinate with metal roof system manufacturer to insure that reduced clip spacings at eave, rake, ridge and corner areas are accommodated.
- C. **Discrepancies:**
 1. In event of discrepancy, notify the architect (owner).
 2. Do not proceed with installation until discrepancies have been resolved.

3.02 INSTALLATION

- A. Install metal roof system so that it is weathertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.
- B. Install metal roof system in accordance with manufacturer's instructions and shop drawings.
- C. Provide concealed anchors at all panel attachment locations.
- D. Install panels plumb, level and straight with seams and ribs parallel, conforming to design as indicated.

3.03 ROOF CURB INSTALLATION

- A. Comply with metal roof system manufacturer's shop drawings, instructions and recommendations for installation of roof curbs. Refer to metal roof system manufacturer's standard installation details. Anchor curbs securely in place with provisions for thermal and structural movement.

3.04 CLEANING, PROTECTION

- A. Dispose of excess materials and remove debris from site.
- B. Clean work in accordance with manufacturer's recommendations.
- C. Protect work against damage until final acceptance. Replace or repair to the satisfaction of the architect (owner), any work that becomes damaged prior to final acceptance.
- D. Touch up minor scratches and abrasions with touch up paint supplied by the metal roof system manufacturer.
- E. **Do not allow panels or trim to come in contact with dissimilar metals such as copper, lead or graphite. Water run-off from these materials is also prohibited. This specifically includes condensate from roof to top A/C units.**

END OF SECTION

**SECTION 07920
SEALANT AND CAULKING**

PART I - GENERAL

- 1.01 WORK INCLUDED
 - A. Furnish all materials and labor and equipment for the installation of exterior and interior caulking as shown on the drawings and as specified in this section.
- 1.02 RELATED WORK
 - A. Section 08410 – Aluminum Entrances, Storefronts and Windows
 - B. Section 04200 - Masonry.
- 1.03 QUALITY ASSURANCE
 - A. Use only personnel who have been specifically trained in caulking procedures and are familiar with joint details as shown on the drawings and the installation requirements called for in this section.
- 1.04 SUBMITTALS
 - A. Submit for approval manufacturer’s specifications and product data and color chart for approval by the Architect.
- 1.05 PRODUCT DELIVERY, STORAGE AND HANDLING
 - A. Deliver materials in original, tightly sealed containers or unopened packages with manufacturer’s name, label, and product identification.
 - B. Store materials out of weather in original containers.
 - C. Do not retain on job site any material that has exceeded shelf life recommended by its manufacturer.
 - D. Use all means to protect the materials of this section before, during and after installation.

PART II - PRODUCTS

- 2.01 ACCEPTABLE MANUFACTURERS
 - A. Pecora.
 - B. Tremco.
 - C. Sonneborn.
 - D. Dow.
- 2.02 MATERIALS
 - A. Exterior Caulking.
 - 1. Dynatrol I.
 - 2. Dymonic.
 - 3. Sonolastic NP-1.
 - B. Interior Caulking.
 - 1. AC-20.
 - 2. Acrylic Latex (Tremco).
 - 3. Sonolastic.
 - C. Backer Rod - Closed Cell.
 - D. Cleaning Agents - Xylene or Toluene.

PART III - EXECUTION

- 3.01 INSPECTION
 - A. Examine joints to be caulked for defects and correct any defects which would adversely affect proper and timely completion of the caulking.
 - B. Ensure that masonry and concrete have cured and are dry, free of dust and clean.

3.02 PREPARATION

- A. Use solvent as specified to clean joints prior to caulking.
- B. Clean all joints and joint surfaces to be sealed as necessary, of dust, oil, dirt, grease, rust, laitance, moisture or any other matter that may adversely affect adhesion of the sealant.

3.03 INSTALLATION

- A. Caulking shall be installed at all joints as follows:
 - 1. Exterior caulking shall be installed as follows:
 - a. At heads, jambs, and sills of all door frames.
 - b. At heads, jambs, and sills of all window frames.
 - c. At junction of masonry and any dissimilar materials.
 - d. Caulk at all areas as shown on the drawings.
 - e. Install triple row of caulking under metal thresholds.
 - f. Caulk at expansion joints in brick walls.
 - g. Caulk at flashing reglets, junction of counter flashing and masonry walls.
 - 2. Interior caulking shall be installed as follows:
 - a. At heads, jambs and sills of all window and door frames.
 - b. At any other visible joints or cracks.
 - c. At tops and end of all casework back splashes.
- B. Exterior & interior caulking (as directed by the Architect) shall be installed at any visible crack and at any space between dissimilar materials.

3.04 APPLICATION OF CAULKING

- A. Caulk all joints as described in Paragraph 3.03.
- B. Where adequate grooves have not been provided, grooves shall be prepared by grinding to minimum width, taking care that adjoining work is not reduced in section.
- C. Where suitable backstop has not been provided, back groove joints shall be tightly packed with foam rope.
- D. Apply all materials in strict accordance with the manufacturer's recommendations.
- E. Caulking compounds shall be applied by means of a gun with nozzles of proper size to fit joints. Type of gun shall be subject to the approval of the Architect.
- F. The caulking compound shall be driven into the joints with sufficient pressure to force out all the air and solidly fill joint grooves.
- G. Caulking, where exposed, shall be free of wrinkles and shall be uniformly smooth.
- H. Joints in wash sections shall be filled slightly convex to obtain a flush joint when dry.
- I. Upon completion of the caulking any caulked joints not filled shall be roughened and filled as specified and exposed surface tooled smooth.
- J. All joints shall be left watertight.

END OF SECTION

SECTION 08110
STEEL DOORS AND FRAMES

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, materials and accessories for the complete installation of all steel doors & frames as shown on the drawings and as specified in this section.
- B. Exterior metal doors shall be SDI Grade II heavy duty seamless 16 ga. steel doors, 1 ¾" thick with polyurethane core. Frames for exterior doors shall be 14 ga. 2" x 6".

1.02 RELATED WORK

- A. Section 08211 – Flush Wood Doors
- B. Section 08700 – Finish Hardware
- C. Section 09900 – Painting

1.03 QUALITY ASSURANCE

- A. Doors and frames shall be commercial quality, level, cold-rolled steel conforming to ASTM A-366.
- B. Use skilled labor who are thoroughly trained, experienced and are familiar with the specified requirements and methods for installation of materials and products of this section.

1.04 SUBMITTALS

- A. Furnish four (4) sets of shop drawings for approval by the Architect prior to fabrication and installation showing size and location of all steel reinforcing.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. All steel doors shall be delivered to the site carefully packaged and stored as follows:
 - 1. The responsible contractor shall remove doors from original packaging upon delivery to the building site and see that any minor scratches caused in shipping are promptly cleaned and touched up with a rust inhibiting primer.
 - 2. If the contractor finds any doors having dents or disfigurements, he will return the doors to the manufacturer and replace them at no additional cost to the owner.
 - 3. The contractor will properly store the doors and frames in a vertical position on planks or dunnage and provide blocking between the units. The doors and frames will then be covered for protection from damage in such a way as to permit air circulation.
 - 4. Any doors or frames that are not stored properly and become dented, rusted or otherwise defaced shall be replaced as directed by the Architect at no additional cost to the Owner.

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Amweld
- B. Ceco
- C. Fenestra
- D. An approved equal.

2.02 MATERIALS

- A. Steel Doors.
 - 1. Thickness – 1 ¾"
 - 2. Face panels – 16 ga.
 - 3. Core - Polyurethane

- B. Exterior Frames shall be 14 ga. cold rolled steel with a 2" face and shall be set-up and arc welded. Frames shall be supplied with factory installed rubber bumpers, 3 per strike jamb and shall have steel hinge reinforcements and prepared for 4 1/2" x 4 1/2" template hinges. Strike reinforcements shall be 16 ga. Frames shall be furnished with a minimum of six wall anchors and two base anchors of manufacturer's standard design.
- C. Interior Frame for wood, where scheduled, shall be 16 ga. cold rolled steel with a 2" face and shall be set-up and arc welded. Frame shall have bumpers and reinforcement as described above.
- D. Finish - Job finished (paint).

PART III – EXECUTION

3.01 INSTALLATION

- A. Install hollow metal units and accessories in accordance with manufacturer's data and as shown on the drawings and as specified in this section.
- B. Coordinate all construction for anchor placement. Install plumb and true to lines, with all necessary clips, anchors and fastenings.
- C. Install doors accurately in their respective frames, within clearances specified in SDI 100.

3.02 ADJUSTING AND CLEANING

- A. Adjust hardware for smooth and balanced door movement.
- B. Remove and replace defective work, including doors and/or frames which are warped, bowed or otherwise damaged.
- C. Clean completed systems after installation in accordance with the manufacture's recommendations.

END OF SECTION

SECTION 08211
FLUSH WOOD DOORS

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish and install all stain grade job finished flush wood doors as shown on the drawings.
- B. Types of doors required:
 - 1. Solid Particle Core Doors.

1.02 QUALITY ASSURANCE

- A. Flush wood doors shall comply with:
 - 1. A.W.I. - Type PC.

1.03 SUBMITTALS

- A. Furnish four (4) sets of shop drawings for approval by the Architect prior to fabrication and installation.

1.04 DELIVERY, STORAGE AND HANDLING

- A. All wood doors shall be delivered to the site and installed in accordance with manufacturer's recommendations and carefully packaged and stored as follows:
 - 1. Package doors in heavy individual cartons, or polybags prior to shipment.
 - 2. Mark both door and carton with opening number and net size of door.
 - 3. Do not receive doors in damp weather and do not store doors in damp areas or in freshly plastered buildings or areas.
 - 4. After doors have been stacked off the floor place corrugated cardboard and plastic over the top of the stack for protection.
 - 5. Doors shall be carried when being moved.
 - 6. Do not drag doors.
 - 7. Do not slide one door across another.
 - 8. Condition doors to the average humidity of the locality before they are hung.
 - 9. Store doors flat prior to hanging.
 - 10. Keep doors in cartons until ready to hang.
 - 11. Replace cartons over doors after hanging to provide protection until the area is free of construction traffic.
 - 12. Doors shall be handled carefully. All doors scratched, gouged, marked, or otherwise marred shall be replaced at no cost to the Owner.
 - 13. Handle unfinished doors with dry, clean canvas gloves to prevent finger marks and stains.

1.05 GUARANTEE

- A. The Contractor shall obtain from the door manufacturer and submit to the Architect a written guarantee that interior wood doors will not contain any defect such as warp, bow, cup, twist or photographing, etc. that makes them unsuitable for their intended use during the life of the installation. The guarantee shall further cover the doors against cracking, chipping, crazing, blistering, flaking, or loss of adhesion for the life of the installation. The terms and provisions of the "Standard Door Guarantee" of the National Woodwork Manufacturer's Association will apply. Provide for replacement of doors, rehanging, and refinishing of any defective door at no cost to the Owner.

PART II – PRODUCTS

2.01 ACCEPTABLE MANUFACTURER'S

- A. Jeld-Wen.
- B. Eggers.
- C. Algoma.

2.02 MATERIALS

- A. Solid Particle Core Doors.
 - 1. Thickness – 1 ¾”.
 - 2. Face Veneer – Select Red Oak
 - 3. Crossband – Hardwood Veneer 1/8” thick.
 - 4. Side Edges – 1 ¼” wood stile.
 - 5. Top Rail – 1 ¼” wood top rail.
 - 6. Bottom Rail – 2 5/16” wood bottom rail.
 - 7. Core – 28 lb. minimum-density Particleboard core.
 - 8. Un-finished – Color as selected by the Architect.
- B. Doors shall receive a stain finish in accordance with Section 09900 of these specifications.

PART III - EXECUTION

3.01 INSPECTION AND PREPARATION WORK

- A. Before installing doors, make sure that door frames are properly installed with square corners, plumb sides, level at head, securely attached to studs and/or masonry and to the floor.
- B. Assure that frames are of the proper size and hand as scheduled and shown on the drawings.
- C. Do not install doors in improperly installed frames.
- D. The Architect shall be notified if an improperly installed frame is encountered while hanging doors.

3.02 INSTALLATION

- A. All interior flush wood doors shall be fitted for frames and hardware.
- B. After installing doors and fitting it to the frame, mortise, drill and/or otherwise work doors to receive finish hardware. The operation of drilling, mortising, and other work to the door for application of the finish hardware shall be done in a neat manner using drills, routers, etc. and other tools especially made for the purpose of preparing wood doors for hardware. All cuts shall be covered by hardware and hardware shall be installed level and secure.
 - 1. Locksets, pushes, pulls, etc. shall be installed in accordance with, and in the location recommended by, the hardware manufacturer.
 - 2. Butt hinges shall be installed in accordance with US Standards.
- C. After cutting and fitting operations required to size and fit the door to the frame and for the application of hardware are complete, seal all cuts, etc.

END OF SECTION

SECTION 08410
ALUMINUM ENTRANCES AND WINDOWS

PART I - GENERAL

1.01 **WORK INCLUDED**

- A. Furnish all labor, materials, and equipment for the complete installation of aluminum doors and frames, window frames, aluminum break metal, adapters, trim and miscellaneous tubing as shown on the drawings and as specified in this section.
- B. All aluminum doors & frames and window frames shall have a painted "Fluoropon" finish, color to be selected by the Architect.
- C. All frames, meeting stiles and door bottoms shall be weather-stripped.

1.02 **RELATED WORK**

- A. Section 08800 - Glass and Glazing

1.03 **QUALITY ASSURANCE**

- A. The fabrication and erection of the work in this section shall be by thoroughly trained and experienced mechanics who are familiar with the specified requirements and the drawings and the requirements of the manufacturer's recommended methods of installation and as approved by the Architect.

1.04 **SUBMITTALS**

- A. Furnish five (5) sets of shop drawings for approval by the Architect before fabrication and installation.

1.05 **PRODUCT HANDLING**

- A. Use all means necessary to protect the materials of this section before, during and after installation and to protect exposed portions of the doors and framing from damage by grinding, polishing machines, plaster, mortar, lime, acid, cement or other harmful compounds.
- B. In the event of damage the Contractor shall immediately replace all damaged items at no cost to the Owner.

PART II - PRODUCTS

2.01 **GENERAL**

- A. Aluminum entrances and window framing for this work shall be the product of one manufacturer.
- B. Aluminum doors and frames for this section are based on products as manufactured by Kawneer, and the numbers shown are Kawneer numbers. Equal products such as Amarlite and EFCO shall be approved in advance by the Architect.

2.02 **MATERIALS**

- A. Components - as shown on the drawings:
 - 1. Framing systems - 2" x 4-1/2" TRIFAB 451T Thermal Framing System for 1" insulating glass shall be used at all exterior aluminum doors and windows.
 - 2. Doors - Medium stile 350 with bolted and welded corners, single acting.
 - 3. Pivots - Offset pivots for single hung doors.
 - 4. Closers - SAM-2 concealed in overhead rail. Closers shall have 105 degree hold open and stop.
 - 5. Pulls. C09 at pull side, CPII at push side. Finish 32D.
 - 6. Thresholds - Standard for offset pivots mill finish aluminum.
 - 7. Weather-strip - Nylon pile weather strip at hinge and lock stile of single doors and at meeting edge and hinge stiles at pairs of doors at mullions. Install surface applied bottom weather strip with flexible blade gasket at bottoms of all aluminum doors - seal to thresholds.
 - 8. Pairs of doors shall be fitted with top and bottom flush bolts in the inactive leaf.
 - 9. Lock - Adams Rite 4510 x 4560.
 - 10. Door Frames - Flushed glaze stops.
 - 11. Finish - Kawneer Fluoropon Architectural Coating - coating will meet or exceed test requirements of AAMA 605.2-92, Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels. The Fluoropon Paint System shall be factory applied and oven baked for a topcoat film thickness of 1.0 - 1.3 mils. Clear topcoats shall be applied at 0.3 - 0.5 mils thickness. Color as selected by the Architect.

12. All screws, miscellaneous fastening devices and internal components shall be of stainless steel, or plated with corrosion-resistant materials of sufficient strength to perform the functions for which they are used.

13. Door corners shall be fabricated with dual moment corner construction and shall be bolted and welded.
14. Vertical glazing pockets shall provide a maximum of 9/16" glass bite.
15. All horizontal faces shall be of one piece design.
16. The system shall provide fully resilient settings on both sides of glass and panels by use of Elastomeric gaskets.

PART III - EXECUTION

3.01 INSTALLATION

- A. All materials shall be first quality and fabrications shall be executed with weather tight joints and concealed connections.
- B. Wind Load - All aluminum frames shall be of sizes, strength and reinforcement to meet the NC Building Code for Wind Load.
- C. Accurately miter and fit all members to produce hairline joints.
- D. All items shall be set in their locations as shown in the details and shall be level, square, plumb and of proper elevations and in alignment with other work.
- E. All joints between metal and masonry and between glass framing and mullion members shall be properly sealed in order to secure a watertight job.
- F. All materials shall be screwed in place using manufacturer's recommended anchors and anchor bolts as required by individual job conditions.
- G. Glass framing members shall provide for flush glazing on all sides with no projecting stops or face joints.
- H. All thresholds shall be set in triple row of caulking.
- I. After completion of installation of aluminum entrances and storefronts the Contractor shall clean all items with plain soap and water or with cleaning agents as recommended by the manufacturer.

END OF SECTION

SECTION 08582
ALUMINUM SLIDING SERVING WINDOWS

PART I - GENERAL

- 1.01 WORK INCLUDED
 - A. Furnish all labor, materials, and equipment for the complete installation of aluminum sliding serving windows as shown on the drawings and as specified in this section.
 - B. Color of and finish shall be selected by the Architect.
- 1.02 RELATED WORK
 - A. Section 08410 – Aluminum Entrance and Windows
- 1.03 QUALITY ASSURANCE
 - A. The fabrication and erection of the work in this section shall be by thoroughly trained and experienced mechanics who are familiar with the specified requirements and the drawings and the requirements of the manufacturer's recommended methods of installation and as approved by the Architect.
- 1.04 SUBMITTALS
 - A. Furnish four sets of shop drawings for approval by the Architect before fabrication and installation.
- 1.05 PRODUCT HANDLING
 - A. Use all means necessary to protect the materials of this section before, during and after installation, from damage.
 - B. In the event of damage the Contractor shall immediately replace all damaged items at no cost to the Owner.

PART II - PRODUCTS

- 2.01 GENERAL
 - A. Sliding Serving Windows shall be Series "C-S" Aluminum vertical Sliding Serving Windows configuration and shall be furnished with screens. Units shall be as manufactured by Nissen & Company, Inc., South El Monte, CA, 91733-1574 or an approved equal.
- 2.02 MATERIALS
 - A. Frames and glass channels shall be of heavy type 6063-T5 aluminum extrusions.
 - B. Finish shall be 215R-1 Clear, anodic hardcoat colors or white baked enamel as selected by the Architect.
 - C. Hardware:
 - 1. Lock – Manufacturer's Standard.
 - 2. Weather Stripping – Side Channels of windows are fitted with a wool pile seal on the active sash and screen for counter contact
 - D. Glazing shall be ¼" plate glass tinted gray or bronze as selected by the Architect. Accessories and Trim:

PART III - EXECUTION

- 3.01 INSTALLATION
 - A. All units to be installed with 2"x4-1/2" aluminum storefront tubing at jambs and head where shown on the drawings, with no obstructions or grooves in the counter surface in accordance with manufacturer's recommendations and installation drawings.
 - B. Frames must be securely fastened, set plumb and level without twisting, bowing or springing.
 - C. After installation, the Contractor shall be responsible for protection of windows and glass and for final cleaning of glass and aluminum frames.

END OF SECTION

**SECTION 08700
FINISH HARDWARE**

PART I - GENERAL

- 1.01 **WORK INCLUDED**
 - A. Furnish all labor, materials, equipment, devices for the complete installation of finish hardware at all interior and exterior doors as specified and as shown on the drawings.
- 1.02 **RELATED WORK**
 - A. Section 08110 – Steel Doors and Frames
 - B. Section 08211 – Flush Wood Doors
- 1.03 **QUALITY ASSURANCE**
 - A. Fire Rated Openings: Comply with requirements of Underwriters Laboratories.
- 1.04 **SUBMITTALS AND PRODUCT DATA**
 - A. Furnish four (4) sets of hardware schedule indicating type, number, location and finish of each item of hardware for approval by the Architect.
 - B. Hardware supplier shall provide schedules and templates, as required by the manufacturer of wood doors, steel door frames, and hollow metal doors, for preparation of frames and doors to receive hardware as scheduled. Templates shall show proper sizes and locations of cutouts, reinforcing, etc.
- 1.05 **PRODUCT HANDLING**
 - A. Packaging and Marking - Each lock set and item of hardware shall be packaged separately and shall be complete with necessary screws, key instructions, and required templates. Each individual container shall be marked with corresponding item number from the hardware schedule identifying the contents and defining its location in the finished work.
- 1.06 **KEYING**
 - A. The hardware supplier shall turn over to the Owner all keys at job completion, assist in tagging the keys and explain the lock and keying system.
 - B. This project shall be master keyed as directed by the Architect. The hardware supplier, if requested, shall meet with the Architect and Owner to provide appropriate keying schedules prior to the submittal of the hardware schedule.
 - C. Furnish 3 keys with each lockset or cylinder.

PART II - PRODUCTS

- 2.01 **HARDWARE**
 - A. Provide and install items as listed in schedule, complete to function as intended.
 - B. Furnish all finish hardware with all necessary screws, bolts, and other fasteners of suitable size and type to anchor the hardware for long life under hard use. All fastenings shall harmonize with hardware as to material and finish.
 - C. Door Silencers - All interior door frames shall have three No. 33 gray rubber door silencers, or four silencers on pairs of doors.
 - D. Stops - All doors shall have wall stops, types and finishes as specified.
 - E. Strike Boxes - All locks shall be equipped with metal strike boxes and strike plates with curved lips 1-1/2" from center line of strike.
 - F. Hinges – see schedule below.
 - G. Catalog Numbers – The numbers shown in the schedule are taken from Corbin/Russwin, Stanley, Zero and Ives.

PART III - EXECUTION

- 3.01 **INSTALLATION**

- A. All locks, deadlocks, cylinders and latch sets shall be installed by the General Contractor.
 - B. The General Contractor shall install all hinges, push and pull devices, closers, thresholds, etc. as directed by the Architect.
- 3.02 **HARDWARE SCHEDULE**
- A. Hardware listed on the following pages shall be for each door or pairs of doors listed in each numerical hardware group:
NOTE: All exterior locks shall be keyed alike.

CONCESSIONS BUILDING

HARDWARE #1

1	Door	Exterior to Hall 3068 x 1.75"	AL x AL x RHR
	Furnish 1	Cylinder x 26D	
	Hardware by others (See Section 08410)		

HARDWARE #2

2	Doors	to Toilets 3068 x 1.75"	W x W x RH
	1.5 Pr.	Butts FBB 179 4.5" x 4.5" x US26D	
	1	Privacy Set CL 3620 Armstrong x AZD x US26D	
	1	Wall Stop 4296 x US26D	

HARDWARE #3

2	Doors	to Offices	W x W x
1	Door U-106	to Janitor 3068 x 1.75"	W x M x
	1.5 Pr.	Butts FBB 179 4.5" x 4.5" x US26D	
	1	Lock Set CL 3661 Armstrong x AZD x US26D	
	1	Wall Stop 4296 x US26D	

HARDWARE #4

1	Door	Concession 3468 x 1.75	M x M x
1	Door	Umpire 3068 x 1.75"	
	1.5 Pr.	Butts FBB 168 4.5" x 4.5" x US26D	
	1	Lock Set CL 3661 Armstrong x AZD x US26D	
	1	Closer DC 2210 x M54 x M73 x 689	
	1	Kick Stop Hold Open US26D	
	1	Aluminum Threshold Clear anodized	

HARDWARE #5

1	Pair Doors	Storage 6068 x 1.75"	M x M x
	3 Pr.	Butts FBB 168 4.5" x 4.5" x US26D	
	1 Pr	Flush Bolts US26D	
	1	Lock Set CL 3661 Armstrong x AZD x US26D	
	2	Kick Stop Hold Open US26D	
	1	Aluminum Threshold Clear anodized	

PUBLIC CONVENIENCE BUILDING

HARDWARE #6

2	Doors	Women	M x M x
2	Doors	Men	M x M x
		3070 x 1.75"	
1.5 Pr.	Butts FBB 168	4.5" x 4.5" x US26D	
1	Push Plate	8" x 14" x 16 ga. x US32D	
1	Pull	2376 x US32D	
1	Cylindrical Deadlock DL	3017 x US26D	
1	Closer DC	2210 x M54 x M73 x 689	
1	Wall Stop	4296 x US26D	
2	8" x 36" Stainless Kick Plates		
1	Kick Stop Hold Open	US26D	

HARDWARE #7

4	Door s	to Chases	
		2- 110x1.75"	M x M x
		2- 3070 x 1.75"	
1.5 Pr.	Butts FBB 168	4.5" x 4.5" x US26D	
1	Cylindrical Deadlock DL	3017 x US26D	

STADIUM

HARDWARE #8

4	Doors	ELECTRICAL LIFT MINTENANCE RIGHT MAINTENANCE LEFT	
		3070 x 1.75	M x M x
1	1.5 Pr. Butts FBB 168	4.5" x 4.5" x US26D	
1	Lock Set CL 3661 Armstrong	x AZD x US26D	
1	Closer DC 2210	x M54 x M73 x 689	
1	Kick Stop Hold Open	US26D	

HARDWARE #9

2	Doors	PRESS BOX	
		3070 x 1.75	M x M x
1	1.5 Pr. Butts FBB 168	4.5" x 4.5" x US26D	
1	Lock Set CL 3661 Armstrong	x AZD x US26D	
1	Closer DC 2210	x M54 x M73 x 689	
1	Kick Stop Hold Open	US26D	
1	Aluminum Threshold		

END OF SECTION

**SECTION 08800
GLAZING**

PART I – GENERAL

1.01 WORK INCLUDED

- A. Furnish and install all glass and glazing, complete, in place as shown on the drawings and as specified in this section.
- B. All exterior glass shall be tinted.

1.02 RELATED WORK

- A. Section 08410 - Aluminum Entrances and Storefronts

1.03 QUALITY ASSURANCE

- A. Use skilled workmen who are thoroughly trained and experienced and have a minimum 5 years experience in glazing and who are completely familiar with specified requirements and the drawings.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver glass with manufacturer's labels in tact.
- B. Do not remove labels until glass has been installed.
- C. Keep glass free from contamination by materials capable of staining glass.
- D. Deliver glazing compound and sealant in manufacturer's unopened, labeled containers.
- E. Replace all broken glass at no cost to the Owner.

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. L.O.F. Company
- B. P.P.G. Industries
- C. Interpane Glass Company
- D. Hordis Bros. Inc.
- E. An approved equal.

2.02 GLASS

- A. ¼" bronze or gray tinted tempered plate glass at exterior storefront doors.
- B. 1" bronze or gray tinted insulating glass at upper level entrance sidelights and at all exterior windows.

2.03 GLAZING

- A. General: Use glazing compound and preformed glazing sealant approved for the application by the manufacturer of the glass and conforming to the glazing materials part of the Flat Glass Manufacturer's Association Glazing Manual.
- B. All glazing shall provide for a watertight installation and shall not leak water into the building.
- C. Provide all glazing accessories required to supplement those accessories which accompany the items to be glazed, and as needed to provide a complete installation, including glazing points, clips, shims, angles, beads, setting blocks, and spacer strips. Use ferrous metal, and if exposed in the finished work, the exposed metal shall have a non-corrosive, non-staining finish.

PART III - EXECUTION

3.01 INSTALLATION

- A. Items to be glazed shall be shop-glazed or field glazed with glass of the quality and thickness specified.
- B. Prepare surrounds and glass, unless otherwise directed, in conformance with the details and general conditions governing glazing in the FGMA Glazing Manual.

- C. Use beads or stops furnished with the items to be glazed to secure the glass in place.
- D. Use insulating units that do not have corners or edges ground, nipped, cut, or fitted after leaving the factory. Do not subject units to springing, forcing, or twisting during setting. Handle so as not to strike the setting frames or other objects when placing glass units.

3.02 CLEANING

- A. Prior to acceptance of the work, thoroughly clean all glass and remove all labels, paint spots, putty, and other defacements and replace all broken glass.

END OF SECTION

**SECTION 09650
RESILIENT FLOORING**

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish all materials, labor and equipment for the complete installation of vinyl composition floor tile, rubber base, and related accessories as shown on the drawings and as specified in this section.
- B. Do all work and furnish materials for preparation, such as filling holes and leveling, of substrate surfaces.
- C. Clean all surfaces and areas of work in this section.
- D. Color and/or patterns shall be as selected by the Architect

1.02 RELATED WORK

- A. Section 03300 - Concrete (Finishing).
- B. Section 04200 - Masonry.
- C. Section 09250 - Gypsum Wallboard System.
- D. Division 15 - Plumbing (floor drains).

1.03 EXTRA MATERIAL

- A. Deliver to the Owner at the completion of the project one (1) box of each type, color, and pattern of resilient floor material required for this project, for maintenance use.
- B. Clearly identify each box.

PART II - PRODUCTS

2.01 FLOOR COVERING MATERIALS

- A. Vinyl composition floor tile shall be Armstrong Excelon as manufactured by Armstrong World Industries, Inc. or an approved equal.
- B. Two color patterns of border & “ checker board” shall be used in all areas to receive VCT

2.02 BASE

- A. Wall base shall be 1/8” thick extruded rubber cove base as manufactured by Roppe Corporation or an approved equal.
 - 1. Rubber set-on type with coved toe 6” high, color as selected by the Architect. Exterior and interior corners shall be factory manufactured.

2.03 ACCESSORIES/ADHESIVES/SEALERS

- A. Edge strips – Reducing type. Color selected by Architect.
- B. Patching Compound – Latex patching and leveling compound as manufactured by Koppers or an approved equal. Mix with water to produce cementitious paste.
- C. Primers and Adhesives – Waterproof, of types recommended by resilient flooring manufacturer for specific material.
 - 1. Use contact type adhesive for the installation of all rubber base.
 - 2. Adhesives for vinyl composition flooring shall be waterproof adhesive as recommended by the flooring manufacturer and shall be so stated on the adhesive container label.

PART III - EXECUTION

3.01 INSPECTION

- A. Ensure floor surfaces are smooth and flat with maximum variation of 1/8 inch in 10 feet. All rough areas and projections shall be ground smooth.
- B. Ensure concrete floors are dry.
- C. Maintain minimum 70 degrees F. air temperature at flooring installation area for 3 days prior to, during and for 24 hours after installation.
- D. Store flooring materials in area of application. Allow 3 days for material to reach equal temperature as needed.

- 3.02 PREPARATION
- A. Remove sub-floor rough spots, ridges, and bumps. Fill low spots, joints, holes and other defects with sub-floor latex patching compound and filler. Report floor defects to the Architect. Do not install floor tile until rough spot projections, or other imperfections have been corrected.
 - B. Clean floor and apply, trowel and float filler to leave smooth, flat hard surface. Prohibit traffic until filler is cured.
- 3.03 INSTALLATION - FLOORING
- A. Open floor tile cartons on enough material to cover each area, and mix tile to ensure shade variations do not occur within any one area.
 - B. Clean substrate and spread cement evenly in quantity recommended by manufacturer to ensure adhesion over entire area of installation. Spread only enough adhesive to permit installation of flooring before initial set.
 - C. Set flooring in place, press with heavy roller to ensure full adhesion.
 - D. Lay flooring with joints and seams parallel to building lines, unless shown otherwise.
 - 1. Lay flooring with tile pattern running in staggered direction within borders and field tile design of different colors, unless otherwise shown.
 - E. Install with minimum tile width 1/2 full size at room or area perimeter, to square grid pattern with all joints aligned.
 - F. Terminate resilient flooring at room side of door frame stop at door openings where adjacent floor finish is dissimilar.
 - G. Install edge reducing strips at unprotected or exposed edges where flooring terminates.
 - H. Scribe flooring to walls, door jambs, columns, cabinets, floor outlets and other appurtenances to produce tight joints.
- 3.04 INSTALLATION - BASE
- A. Fit joints tight and vertical. No cracks between base sections or prefabricated corners will be acceptable. All base with cracks or spaces between sections of base and/or external corners will be replaced at no cost to the Owner.
 - B. Install base on solid backing. Adhere tightly to wall and floor surfaces with contact cement.
 - C. Scribe and fit to door frames and other obstructions.
 - D. Install straight and level to variation of plus or minus 1/8 inch over 10 feet.
- 3.05 PROTECTION
- A. Prohibit traffic from floor finish for 48 hours after installation.
- 3.06 CLEANING
- A. Remove excess adhesive from floor, base and wall surfaces without damage.
 - B. Clean, wax and buff floor and base surfaces in accordance with manufacturer's recommendations.
 - 1. Use electrical buffing machine to polish floor.
 - 2. All resilient floors shall have a glossy sheen after cleaning, waxing and buffing.
 - 3. Protect floor from traffic and other trades.

END OF SECTION

**SECTION 09260
GYPSUM WALLBOARD**

PART I - GENERAL

- 1.01 **WORK INCLUDED**
 - A. Furnish all labor, materials, devices, accessories and equipment for the complete installation of the gypsum wallboard wall and ceiling systems as shown on the drawings and as specified in this section.
- 1.02 **RELATED WORK**
 - A. Section 07210 – Insulation
 - B. Section 09900 - Painting.
- 1.03 **QUALITY ASSURANCE**
 - A. Gypsum wallboard system shall be installed in accordance with the material manufacturer's recommendations.
 - B. Comply with ASTM C754.
 - C. Use skilled workmen who are thoroughly trained and experienced in the work required in this section and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- 1.04 **DELIVERY, STORAGE AND HANDLING**
 - A. All materials as specified shall be delivered to the project site in original unopened containers and stored in a dry place off concrete floors and protected from exposure to the elements.
 - B. All materials shall be protected from other trades and all damaged materials shall be replaced at no cost to the Owner.

PART II - PRODUCTS

- 2.01 **MATERIALS**
 - A. Fasteners - 1-1/4" Type W drywall screws at all gypsum board installed over wood framing or 1" Type S drywall screws at all gypsum board install over metal framing.
- 2.02 **GYPSUM WALLBOARD**
 - A. 5/8" Thick , maximum lengths, square ends tapered and eased edges at all walls and ceilings where scheduled.
- 2.03 **GYPSUM WALLBOARD ACCESSORIES**
 - A. Corner Beads – Galvanized steel with punched flanges.
 - B. Edge Trim – "J" shaped steel channel for edge application to rough edges, or edges of gypsum wallboard that abut other surfaces such as door frames, aluminum tubing, and other dissimilar surfaces.
 - C. Joint Compound – Pre-mixed joint treatment and laminating compound for joints, lamination and attachment depressions meeting ASTM C-475 for filling and finishing gypsum wallboard joints.
 - D. Joint tape – Perforated (for embedding in joint compound) Perf-A-Tape, Cross-laminated fiber tape.

PART III - EXECUTION

- 3.01 **GYPSUM BOARD INSTALLATION - PREPARATION**
 - A. Inspection - Examine framing and blocking and report to the Architect any defects which shall be corrected before installing gypsum wallboard.
- 3.02 **GYPSUM WALLBOARD INSTALLATION**
 - A. Gypsum wallboard shall be applied to walls. To minimize end joints, use wallboard of maximum practical lengths. Boards shall be brought into contact, but shall not be forced into place. Where ends or edges abut, they shall be neatly fitted. At all exterior corners tapered edges shall meet and abut. Apply, face out, with long dimension vertical. Stagger joints on opposite sides of partitions.

- B. Ends and edges of all gypsum wallboard shall occur over framing members, except when joints are at right angles to framing members as in horizontal application or when end joints are to be back blocked.
- C. End joints shall be staggered. Joints on opposite sides of partitions shall occur on different studs.
- D. Wallboard shall be attached with screws as specified. Apply screws spaced not to exceed 10" on center in the field of the board and 10" on center at all edges.
 - 1. Fasteners shall be spaced at least 3/8" from edges and ends.
 - 2. Drive screws home with heads slightly below surface in dimple formed by buglehead screws. Care shall be taken not to break paper.
- E. When necessary to cut edges, scribe or make cutouts within the field or at edge of wallboard, it shall be done in a precise workmanlike manner.
- F. Cutouts at switch boxes, duplex receptacles, light fixture boxes, etc., shall fit tight to metal boxes. Wallboard applied with gap not covered by switch or receptacle plates or light fixture bases shall be removed and replaced at the direction of the Architect.
- G. Corner beads as specified shall be installed on all exterior corners, attached with suitable fasteners spaced 9" on center on both sides, and shall be in single lengths unless corner exceeds standard stock lengths.
- H. All interior corners at walls and at junction of wall and ceilings shall be finished with joint compound and tape folded at 90 degree angle to fit the interior corner.
- I. Channels – Galvanized steel channels shall be applied to all edges that abut dissimilar materials as specified.
- J. Pre-filling – All "V" grooves formed by abutting eased radial edges of wallboard shall be filled flush with plane of taper with pre-fill compound. Excess compound beyond the "V" groove shall be wiped clean, leaving a flat joint for taping. Pre-filling compound shall be US Gypsum Durabond, Polyindurate hardening type joint compound.
- K. Taping – After pre-fill has hardened, a thin, uniform layer of taping compound shall be applied to all joints and angles to be reinforced. Reinforcing tape shall be applied immediately, centered over joint, seated into compound. A skim coat shall follow immediately, but shall not function as a fill or second coat. Tape shall be properly folded and embedded at all angles to provide a true angle.
- L. Filling – After taping compound has hardened, topping compound shall be applied, filling board taper flush with surface. Fill coat shall cover tape and feather out slightly beyond taper. On joints with no taper, fill coat shall cove tape and feather out at least 4" on either side of tape.
- M. Finishing – After topping compound is dry, a finishing coat of topping compound shall be spread evenly over and extending slightly beyond fill coat on all joints and feathered to a smooth, uniform finish. Over tapered edges, finished joint shall not protrude beyond plane of surface. All taped angles shall receive a finish coat to cover tape and taping compound and provide a true angle. Sanding shall be done between coats and after final application of compound to provide a smooth surface, ready for decoration.
- N. Fastener Depressions - Taping compound shall be applied to all fastener depressions followed, when hardened, by at least two coats of topping
- O. Finishing Beads and Trim – Taping compound shall be applied to all bead and trim and shall be feathered out from ground to plane of surface. When hardened, taping compound shall be covered by two coats of topping compound applied separately and allowed to dry between coats. Each coat shall extend slightly beyond previous coat. The finish coat shall be feathered from ground to plane of surface and sanded as necessary to provide a flat, smooth surface ready for decoration.

3.03 WALLBOARD CEILINGS

- A. Install gypsum wallboard ceilings in areas scheduled in direct contact with the bottom chord of the wood trusses or ceiling joists. Ceiling board shall be attached with proper screws as specified and spaced as called for in 3.02D above.
- B. Finishing of gypsum board at gypsum ceilings shall be as specified in 3.02 above for wall finishing.

- 3.04 CLEANING – At completion of installation of partitions and ceilings, all rubbish, excess material and equipment shall be removed from the building and the job site, leaving the building free of debris and the floors broom clean.

END OF SECTION

SECTION 09900
PAINTING

PART I - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor and materials to install all painting as specified in this section or as shown on the drawings.
- B. Prepare surfaces which are to receive finish.
- C. Finish surfaces as indicated in schedule at end of this section.
- D. Paint concrete floors in lower level rest rooms.
- E. Paint all gypsum board ceilings.

1.02 RELATED WORK

- A. Section 05500 - Miscellaneous Metals (shop primed).
- B. Section 06200 - Finish Carpentry (paint work).

1.03 QUALITY ASSURANCE

- A. Materials shall be applied by skilled mechanics, under supervision of competent foreman skilled in mixing, coloring, and application of paints. Surface shall be clear, smooth, free from sandpaper scratches and thoroughly dry before painting. If surfaces are not in proper condition, notify the Architect in writing and do not proceed until faults are corrected.
- B. Colors for painting shall be as selected by the Architect. No painting shall be done without Architect's approval.

1.04 EXTRA MATERIALS

- A. Leave on premises or deliver to the Owner as directed by the Architect not less than one gallon of each color of paint used.
- B. Containers shall be tightly sealed and clearly labeled for identification.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, color designation and instructions for mixing and/or reducing.
- B. Provide adequate storage facilities. Store paint materials at minimum ambient temperature as recommended by the paint manufacturer in well ventilated area.
- C. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture contents of surfaces are below the maximums for moisture as recommended by the paint manufacturer.
- B. No exterior paint work shall be done in freezing weather, during rain or while surfaces are wet. No interior paint or stain work shall be done when temperature is below 70 degrees F., or, as recommended by the manufacturer.
- C. Provide adequate continuous ventilation and sufficient heat to maintain temperatures as recommended by the manufacturer and as specified for 24 hours before, during and 48 hours after application of stain or paint.
- D. Provide for each painter adequate and full lighting as directed and approved by the Architect on surfaces to be finished so painters can observe brush marks, streaks of spray gun, and wipe marks when staining.
 - 1. Lighting shall be provided to each painter by mounting a four tube fluorescent reflective light fixture vertically on a temporary movable device with drop cord of sufficient length plugged into electrical outlet for area to be painted, or an approved equal.

1.07 PROTECTION

- A. Adequately protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.
- B. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted.
- C. Place cotton waste, cloths and material which may constitute a fire hazard in closed metal containers and remove daily from site.
- D. Remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items are to be carefully stored, cleaned and replaced on completion of work in each area. Do not use solvent to clean hardware that may remove permanent lacquer finish.

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Benjamin Moore.
- B. Devoe.
- C. Sherwin Williams.

2.02 MATERIALS

- A. Paint, varnish, stain, enamel and fillers listed below are Benjamin Moore unless otherwise noted:
 - 1. Stain - See Finish Schedule in the specifications.
 - 2. Paint - See Finish Schedule in the specifications.
 - 3. Traffic Marking Paint.
- B. Paint Accessory Materials: (Linseed oil, shellac, L.O.C. colors, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified) shall be of high quality and approved manufacturer.
- C. Paints: L.O.C. colors and mixed stains shall be field mixed to colors approved by the Architect. Paint pigments shall be fully ground maintaining a soft paste consistency, capable of being readily and uniformly dispersed to a complete homogeneous mixture.
- D. Paints to have good flowing and brushing properties and be capable of dry or curing free of streaks or sags.

PART III - EXECUTION

3.01 INSPECTION

- A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing to Architect any condition that may potentially affect proper application. Do not commence until such defects have been corrected.
- B. Correct defects and deficiencies in surfaces which may adversely affect work of this section.

3.02 PREPARATION

- A. Remove any contamination from new concrete floors. Acid etch if necessary. Clean new concrete floors with soap and water, rinse and dry.
- B. Remove contamination from gypsum wallboard surfaces. Paint after defects have been remedied. Prime if necessary to display defects.
- C. Remove any surface contamination and oils from galvanized surfaces and wash with solvent. Apply coat of etching type primer.
- D. Remove dirt, loose mortar, scale, powder and other foreign matter from concrete and concrete block surfaces which are to be painted or to receive a clear seal. Remove oil and grease as recommended by the manufacturer, rinse well and allow to thoroughly dry.
- E. Remove stains from concrete and concrete block surfaces caused by weathering of corroding metals. Allow to thoroughly dry.
- F. Fill hairline cracks, small holes and imperfections on plaster surfaces with patching plaster. Smooth off to match adjacent surfaces. Wash and neutralize high alkali surfaces where they occur.
- G. Remove grease, rust, scale, dirt and dust from steel and iron surfaces. Where heavy coatings of scale are evident, remove by wire brushing, sandblasting or any other necessary method. Ensure steel surfaces are satisfactory before paint finishing.
- H. Clean unprimed steel surfaces by washing with solvent, ensuring weld joints, bolts and nuts are similarly cleaned. Prime surfaces to indicate defects, if any. Paint after defects have been remedied.
- I. Sand and scrape rusted shop primed steel surfaces such as steel door-frames etc. to remove loose primer and rust. Feather out edges to make touch up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- J. Wipe off dust and grit from miscellaneous wood items and millwork prior to priming. Spot coat knots, pitch streaks and sappy sections with sealer. Fill nail holes and cracks after primer has dried and sand between coats. Back prime all exterior woodwork.

3.03 APPLICATION

- A. All painting for plumbing, heating and electrical work, shall be done under this contract. Colors of such items on exposed ceiling shall be the ceiling color and on walls shall be the wall color. No painting is required on aluminum or stainless steel. No work shall be done in unexposed areas such as pipe spaces. All work having prime coat applied under other sections shall be fully finished with number of coats as specified in this schedule.
- B. Prior to installation of any paint, the Contractor shall furnish to the Architect, any samples of materials to be used on this project in their original containers, that he deems necessary. Any material applied prior to this submission and/or without the Architects prior permission, will not be considered acceptable and the Contractor shall re-coat the surface at his own expense. The Architect shall inspect each coat individually before the next coat is applied or no credit for such coat will be given and the Contractor shall re-coat the work in question at his own expense. The Contractor shall keep a progress schedule showing the number of coats for each room or space for inspection.
- C. Apply each coat at proper consistency.
- D. All paint (each coat) shall be rolled on the surface to receive paint.
- E. Sand lightly between coats to achieve required finish.
- F. Allow each coat of paint to dry before following coat is applied.
- G. Where clear finishes are required ensure tint fillers match the natural wood color. Work fillers well into the grain before set. Wipe excess from the surface.
- H. Back prime exterior woodwork, which is to receive paint finish, with exterior primer paint.
- I. Prime top and bottom edges of wood doors with enamel undercoat when they are to be painted.
- J. Prime top and bottom edges of wood doors with sealer when they are to receive a stain or clear finish.

3.04 CLEANING

- A. No paint spots shall be left on glass, hardware, or other work. The painter shall be responsible for any damage to other items of the construction, including carpet. All damaged carpet shall be replaced at no cost to the Owner, including carpet that does not come clean of spots or paint after shampooing.
- B. As work proceeds, promptly remove any paint spilled, splashed or spattered.
- C. During progress of work, premises shall be kept free of any unnecessary accumulation of tools, equipment, surplus materials and debris.
- D. Upon completion of work, premises shall be left neat, clean and to the satisfaction of Architect.

3.05 EXTERIOR PAINTING AND FINISHING SCHEDULE

- A. Metal (Ferrous)
 - 1st Coat – Moore’s I.M.C. DTM Alkyd Semi-Gloss (M24)
 - 2nd Coat – Moore’s I.M.C. DTM Alkyd Semi-Gloss (M24)
 - 3rd Coat – Moore’s I.M.C. DTM Alkyd Semi-Gloss (M24)
- B. Roof top metal (Boiler stacks, gas vents fans and housings, air intake, louvers, vents, A/C condensers or any other roof top metal)
 - 1st Coat – IronClad Latex Low Lustre Metal & Wood Enamel (363)
 - 2nd Coat – IronClad Latex Low Lustre Metal & Wood Enamel (363)
 - 3rd Coat – IronClad Latex Low Lustre Metal & Wood Enamel (363)
- C. Wood Trim – All exterior wood to be back primed
 - 1st Coat – Moorcraft Latex Exterior Primer (169)
 - 2nd Coat – Moorcraft Latex House & Trim Paint (170)
 - 3rd Coat – Moorcraft Latex House & Trim Paint (170)
- D. Concrete Masonry
 - 1st Coat – Moore’s Acrylic Masonry Sealer (066)
 - 2nd Coat – Moorlastic Acrylic Elastomeric Waterproof Coating (055)
 - 3rd Coat – Moorlastic Acrylic Elastomeric Waterproof Coating (055)

3.06 INTERIOR PAINTING AND FINISHING SCHEDULE

- A. Wood (doors, frames, casings, trim, etc.)
 - 1st Coat – Benwood Interior Wood Finishes Wood Grain Filler (238)
tinted for shade of stain with Moor-O-Matic Colorants
(Omit for close grained woods)
 - 2nd Coat – Benwood Interior Wood Finishes Penetrating Stain (234)
 - 3rd Coat – Benwood Polyurethane Finish Low Lustre (435)
 - 4th Coat – Benwood Polyurethane Finish Low Lustre (435)

- B. Metal (doors and frames)
 - 1st Coat – IronClad Latex Low Lustre Metal & Wood Enamel (363)
 - 2nd Coat – Moorcraft Latex Semi-Gloss Enamel (276)
 - 3rd Coat – Moorcraft Latex Semi-Gloss Enamel (276)
- C. Gypsum Wall Board
 - 1st Coat – Regal First Coat Primer & Underbody (216)
 - 2nd Coat – Regal AquaVelvet (319)
 - 3rd Coat – Regal AquaVelvet (319)
- D. Concrete Masonry Walls
 - 1st Coat – Moorcraft Interior & Exterior Block Filler (173)
 - 2nd Coat – Moorcraft Latex Semi-Gloss Enamel (276)
 - 3rd Coat – Moorcraft Latex Semi-Gloss Enamel (276)
- E. Concrete Floors
 - 1st Coat – Moore’s I.M.C. Epoxy-Ester Enamel (M25)
 - 2nd Coat – Moore’s I.M.C. Epoxy-Ester Enamel (M25)*
 - 3rd Coat – Moore’s I.M.C. Epoxy-Ester Enamel (M25)
 - *NOTE: Anti-Slip Aggregate (M67) – mix into product before application at a rate of one (1) pound of M67 per gallon of product 2nd coat only. Stir frequently to keep M67 in suspension during application. Coordinate with Owner prior to application.

END OF SECTION

**SECTION 10800
TOILET ACCESSORIES**

PART I - GENERAL

- 1.01 WORK INCLUDED
 - A. Furnish and install all stainless steel toilet accessories as specified and as listed in this section.
 - B. Furnish and install attachment hardware as specified and/or required.
- 1.02 RELATED WORK
 - A. Section 09260 – Gypsum Wallboard
- 1.03 SHOP DRAWINGS
 - A. Submit four (4) sets of shop drawings of all toilet accessories and manufacturer's product data for approval by the Architect before fabrication and installation. Data shall show each accessory in large scale and installation method.
- 1.04 DELIVERY, STORAGE AND HANDLING
 - A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.
 - B. Pack accessories individually, in a manner to protect the accessory and its finish.
- 1.05 PROTECTION
 - A. Protect adjacent finished surfaces and work from damage during installation of work of this section.

PART II - PRODUCTS

- 2.01 ACCEPTABLE MANUFACTURERS
 - A. Bobrick (numbers in schedule of accessories, Part 3 of this section are Bobrick).
 - B. Bradley.
 - C. McKinney.
- 2.02 MATERIALS
 - A. Sheet Steel – ASTM A366, cold rolled stretcher leveled with a 1.25 oz/sq. ft. galvanized coating.
 - B. Stainless Steel Sheet – ASTM A167, Type 304, commercial grade, 16, 18, 20 and 22 gauge per specified manufacturer's accessories.
 - C. Stainless Steel Tubing – ASTM A269, commercial grade, seamless welded.
 - D. Adhesive – Epoxy type contact cement.
 - E. Fasteners, Screws, and Bolts – Stainless steel and hot dipped galvanized.
 - F. Expansion Shields – Lead as recommended by accessory manufacturer for component and substrate.
- 2.03 FINISHES
 - A. Stainless Steel No. 4 satin luster finish.
- 2.04 FABRICATION
 - A. Weld and grind smooth, joints of fabricated components.
 - B. Form exposed surfaces from one sheet of stock, free of joints.
 - C. Provide steel anchor plates and anchor components for installation on building finishes as specified in this section.
 - D. Form and maintain surfaces flat without distortion, scratches or dents.
 - E. Hot dip galvanized ferrous metal anchors and fastening devices.
 - F. Components shall be shop assembled and packaged, complete with anchors and fittings.

PART III - EXECUTION

- 3.01 PREPARATION

- A. Deliver inserts and anchor plates to job site at approximate time for building-in. Provide templates and rough-in measurements as required.
 - B. Notify Architect, in writing, of any conflicts detrimental to the installation or operation of units, before starting work.
 - C. Verify location of accessories, with the Architect.
- 3.02 INSTALLATION
- A. Install fixtures, accessories and items in accordance with the manufacturer's printed instructions.
 - B. Install accessories true, plumb, level and securely anchored to substrate.
 - C. Toilet accessory items listed shall be installed in each toilet as listed or shown on the drawings.
 - D. The General Contractor shall install owner-furnished paper towel holders.

3.03 SCHEDULE OF ACCESSORIES

Women's Rest Room

- Ten (10) Paper Holders B-6857
- Two (2) Grab Bar B-6293
- Two(2) Grab Bar B-6206-36
- Two (2) Paper Towel Dispenser B-263
- Three (3) Mirrors B-290 2436
- One (1) Surface-Mounted Diaper Changing Station B-2210

Men's Rest Room

- Five (5) Paper Holders B-6857
- One (1) Grab Bar B-6293
- One (1) Grab Bar B-6206-36
- Two (2) Paper Towel Dispenser B-263
- Three (3) Mirrors B-290 2436
- One (1) Surface-Mounted Diaper Changing Station B-2210

Umpire Toilet

- One (1) Paper Holders B-6857
- One (1) Grab Bar B-6293
- One (1) Grab Bar B-6206-36
- Two (2) Robe Hook B-6717
- One (1) Paper Towel Dispenser B-263
- One (1) Mirrors B-290 2436

Office Toilet

- One (1) Paper Holders B-6857
- One (1) Grab Bar B-6293
- One (1) Grab Bar B-6206-36
- One (1) Robe Hook B-6717
- One (1) Paper Towel Dispenser B-263
- One (1) Mirrors B-290 2436

END OF SECTION

**SECTION 10520
FIRE EXTINGUISHERS AND CABINETS**

PART I – GENERAL

- 1.01 WORK INCLUDED
 - A. Furnish and install fire extinguishers, cabinets and accessories as specified in this section and located as shown on the drawings.
- 1.02 RELATED WORK
 - A. Section 06100 - Rough Carpentry.
 - B. Section 09250 - Drywall Construction.
 - C. Section 09900 – Painting
- 1.03 QUALITY ASSURANCE
 - A. Conform to NFPA 10 requirements for portable fire extinguishers.
 - B. Provide fire extinguishers, cabinets and accessories by a single manufacturer.
 - C. Conform to ASTM E814-97 and ASTM E119-97 for fire resistive wall performance where required.
- 1.04 SUBMITTALS
 - A. Submit four (4) copies of brochures and product data showing cabinets, sizes, and colors as specified for approval by the Architect before fabrication, and installation.
- 1.05 DELIVERY, STORAGE AND HANDLING
 - A. Fire extinguishers, cabinets and accessories shall be packaged, handled, delivered and stored at the site in a manner that will avoid damage. Damaged equipment will be rejected.

PART II – PRODUCTS

- 2.01 ACCEPTABLE MANUFACTURERS
 - A. J & L Industries.
 - B. Larsen.
 - C. Fyr-Fyter.
 - D. An approved equal.
- 2.02 EQUIPMENT
 - A. Fire Extinguishers – Dry Chemical Type, Cosmic Series #10E as manufactured by J. L. Industries.
 - B. Fire Extinguisher Cabinets – Provide J.L.’s Panorama Series, model #1022C70. Trim to be fabricated from aluminum with a #180 Clear Anodized Aluminum finish. Door to be clear acrylic.
 - C. Provide cabinets with fire-rated option for installation in 1 hr. rated walls where applicable.
 - D. Accessories – Provide Extinguisher Hanger Brackets where extinguishers are shown on the drawings without cabinets.

PART III – EXECUTION

- 3.01 PREPARATION
 - A. Openings for cabinets shall be made as walls and gypsum wallboard are erected. Take special note of opening sizes of cabinets with fire-rated options for installation in fire rated walls.
 - B. Provide supports in wall openings to carry load of fire extinguishers and cabinets.
- 3.02 INSTALLATIONS
 - A. Install items included in this section in locations and at mounting heights as indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.
 - 1. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer’s instructions.

2. Securely fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

3.03 CLEANING

- A. Clean acrylic doors and tubs in strict accordance with the manufacturer's recommendations and remove all trash, or other debris created as a result of this installation.

END OF SECTION

SECTION 10155
STAINLESS STEEL TOILET PARTITIONS

PART I – GENERAL

1.01 WORK INCLUDED

- A. Furnish all equipment, labor and materials for the installation of floor mounted, overhead braced stainless steel toilet partitions as shown on the drawings and as specified in this section.

1.02 RELATED SECTIONS

- A. Section 10800 Toilet Accessories.
B. Section 06100 Rough Carpentry

1.03 SUBMITTALS

- A. Furnish five (5) sets of shop drawings and color charts for approval by the Architect before fabrication or installation.

1.04 QUALITY ASSURANCE

- A. Components of toilet partitions shall be from one single source manufacturer who certifies that materials meet or exceed specifications.
B. Installation: Installer shall have a history of completed jobs of similar size and scope, and shall be qualified.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the job site in original, unopened cartons or other packaging materials necessary to protect finishes. Packages shall be clearly labeled with manufacturer's name and item description. Materials shall be stored in such packaging until installation. Partitions shall be stored in a vertical position with adequate support to ensure flatness and to prevent damage to surfaces.

1.06 PROJECT CONDITIONS

- A. Building shall be enclosed and provide complete protection from outside weather.

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. General Partitions, Inc.
B. Accurate Partitions Corp..
C. Ampco Products, Inc.
D. An approved equal.

2.02 PRODUCTS

- A. Doors, Panels and Urinal Screens shall be 1" thick and fabricated from tension leveled 22 ga. type 304 stainless steel with a #4 finish bonded to a sound deadening honeycomb core.
B. Pilasters shall be 1-1/4" thick, 82" high, and fabricated from tension leveled 22 Ga. type 304 stainless steel with a #4 finish bonded to a sound deadening honeycomb core. Top of pilasters to be securely braced with extruded aluminum head-rail.
C. Material – Doors, panels, pilasters and urinal screens shall be manufactured with a resin impregnated honeycomb core that is bonded under pressure to the stainless steel with a non-toxic adhesive to insure solid construction and sound attenuation. All the stainless steel components shall be assembled with a continuous roll-formed interlocking, 22 ga. stainless steel crown molding welded and ground smooth at the corners.
D. Finish – All components shall be 304 stainless steel with a #4 finish and include a PVC film for protection during shipment and installation.
E. Head-rail to be continuous anti-grip rail of aluminum alloy, polished and anodized. Head-rail shall span all compartments and brace the end pilaster to the back wall.
F. Hardware and Fittings:
1. Panels and pilasters shall be attached to one another with stainless steel "U" brackets and panels shall be attached to walls with full length stainless steel brackets. Brackets shall be of 2 ear design and will

be attached with screws that have vandal proof heads. Where through bolting of panels is required provide sex bolts with theft proof heads.

2. Pilaster trim shall be 3" high .031 stainless steel.
3. Doors shall be equipped with stop and keeper, combination coat hook and bumper and concealed lock with emergency access and shall be of stainless steel. Concealed hinge works on opposing nylon cams. Top pivot pin within door having bearing points above and below hinge brackets. Door cycling shall be on a level plane and shall be operable and adjustable to any angle. Out-swing doors shall be equipped with outside bumpers to protect walls. All hardware, except coat hook and bumper, shall be thru-bolted with sex bolts having theft-proof heads.

PART III – EXECUTION

3.01 INSPECTION

- A. Before installation, the installer shall inspect the site to insure that no defects or conditions exist that would result in an unsatisfactory installation of the partitions.

3.02 INSTALLATION

- A. Install partitions and enclosures in accordance with shop drawings and manufacturer's current installation instructions. Leave partitions complete, clean and free from defects in workmanship.
- B. Doors and hardware shall be thoroughly adjusted and left in proper working condition. Set doors in open or closed position as directed.

CLEANING

- A. All rubbish and cartons generated by installing contractor shall be removed and area left broom clean.

END OF SECTION

**SECTION 13125
GRANDSTANDS AND BLEACHERS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Permanent Steel Grandstands.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Concrete foundations and anchor bolts.
- B. Section 03600 - Grout.

1.3 REFERENCES

- A. Americans with Disabilities Act (ADA) - ADA Standards for Accessible Design.
- B. ASTM A 36 - Standard Specification for Carbon Structural Steel.
- C. ASTM A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- D. ASTM A 307 - Specification for Carbon Steel Bolts and Studs (Ordinary Bolts).
- E. ASTM A 325 - Specification for Carbon Steel Bolts (High Strength Bolt).
- F. ASTM A 572 - Structural Steel Hot-Dipped Galvanized after fabrication to ASTM A123 Specifications.
- G. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- H. ASTM C 873 - Standard Test Method for Compressive Strength of Concrete Cylinders Cast in Place in Cylindrical Molds.
- I. The Aluminum Association - Specifications & Guidelines for Aluminum Structures.

1.4 DESIGN REQUIREMENTS

- A. Conform to applicable code for all applicable loads and design requirements.
- B. Structural Performance: Design, engineer, fabricate, and erect grandstands to withstand the following design loads:
 - 1. Live Load: 100 psf gross horizontal projection.
 - 2. Lateral Sway Load: 24 plf seat plank.
 - 3. Perpendicular Sway Load: 10 plf seat plank.
 - 4. Live Load of Seat and Tread Planks: 120 plf.
- C. Compliance:
 - 1. Guardrail: Design and erect guardrail in accordance with applicable building codes.
 - 2. All welding to be performed by certified welders conforming to AWS Standards.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Manufacturer's data sheets on products to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Submit shop drawings sealed by a Registered Professional Engineer (P.E.) licensed in the State where the project is located. Include schedules for type, location, quality, and details of steel and aluminum components required for the project.
- D. Source Quality Certification: Submit mill certificates verifying that products furnished comply with specified requirements.
- E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- F. Verification Samples: For each finish product specified, two samples, minimum 18 inch seat sample, representing actual product, color, and patterns.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer must have five (5) years of experience in the manufacture of bleachers and grandstands of the type and size specified.
- B. Installer Qualifications: Factory-trained and experienced in the proper installation of grandstands.
- C. Welders: AWS certified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect all components and accessories from corrosion, deformation, damage and deterioration when stored at job site. Keep materials free from dirt and foreign matter.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. It is the responsibility of the Owner to verify site location, verify or provide elevation and location benchmarks, and locate all underground utilities and obstructions.
- C. Owner will furnish geotechnical report indicating soil conditions and allowable soil bearing pressure.

1.9 WARRANTY

- A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.
 - 1. Duration: One (1) Year.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Southeastern Seating, Inc., which is located at: 903 E. 17th Ave. ; Tampa, FL 33605; Toll Free Tel: 800-248-2099; Tel: 813-273-9858; Fax: 813-273-9196; Email: [request info](#); Web: [seseating.com](#)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MATERIALS

- A. Substructures:
 - 1. Structural Fabrication: ASTM A 36 steel.
 - 2. Shop connections: Seal welds.
 - 3. After fabrication, all steel is hot-dipped galvanized to ASTM A 123.
- B. Seating/Planking/Tread/Joint Sleeves:
 - 1. Seat Planks, Backrests, Riser Planks and Railing: Extruded aluminum alloy 6063-T6. Clear anodized 204R1, AA-M10C22A31, Class II.
 - 2. Tread Planks: Extruded aluminum alloy, 6063-T6 mill finish.
 - 3. Joint Sleeve assembly: Extruded aluminum alloy, 6063-T6, mill finish.
- C. Accessories:
 - 1. Channel End Caps: Aluminum alloy, 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II.
 - 2. Hardware:
 - a. Bolts, Nuts: Hot-dipped galvanized.
 - b. Tie-down Clip Assembly: Aluminum alloy 6061-T6.
 - c. Structural Hardware: Equal to or greater than hot-dipped galvanized ASTM A 307. No connections utilizing high strength bolts are classed as slip critical.
 - 3. Aisle and Stair Nose: Extruded aluminum alloy 6063-T6 with contrasting nose.
- D. Concrete foundations and anchor bolts: Section 03300.

2.3 PERMANENT STEEL GRANDSTANDS

- A. Grandstand Description:
 - 1. Number of Rows: 14.
 - 2. Length of Grandstand: _150+/-feet.
 - 3. Seating Capacity: 600 @ 24" 800 @ 18".
 - 4. Front Walkway: Concrete by others.
- B. Structural:
 - 1. Vertical Columns: Locations as noted on the Contract Drawings.
 - 2. Horizontal Beams: Wide Flange (W) beams. Designed as shown in the Contract Drawings.
 - 3. Stringers: Wide flange (W) beams with angle rise and tread depth fabrication. Placed a maximum of 6 feet (1829mm) on center.
 - 4. Cross braces: Steel angles located as required to meet structural requirements.
- C. Aisles:
 - 1. Width: 54 inches & 36 inches
 - 2. Aisles with seating on both sides to have a 34 inch (864mm) high handrail with intermediate rail at approximately 22 inches (559mm) above tread.
 - 3. Handrails: Rounded ends, no sharp corners and discontinuous to allow access to seating through a space 22 inches (559mm) minimum to 28 inches (711mm) maximum.

- D. Seating:
 - 1. Height: 17 inches (432mm) above its respective tread.
 - 2. Finish: Anodized.
 - 3. Seats: 2 inch by 10 inch (51mm x 254mm) flat aluminum planks.
- E. Backrest: 5 inch (127mm) aluminum backrest.
 - 1. Finish: Anodized.
- F. Risers:
 - 1. Size as required to fulfill the decking arrangement specified.
 - 2. Finish: Powder Coated - Color as selected by the Architect from manufacturer's available color offerings.
- G. Decking:
 - 1. Rise per Row: 11".
 - 2. Depth per Row: 30".
 - 3. Arrangement:
 - a. Tongue and Groove Closed Deck: Various plank widths designed to completely close the deck. Planks interlock via a male "tongue" extrusion and a female "groove" extrusion running the length of the planks.
- H. Guardrails: Locate at all sides of bleacher, entry stairs and ramps, portals, and landings. Railing to be anodized aluminum with end plugs at ends of straight runs and/or elbows at corner. Secure all guardrails to angle rail risers with galvanized fasteners. Locate railing 42 inches (1067mm) above walkways, entrances and any adjacent aisle surface. Include vertical aluminum picket safety fence on sides and back.
- I. Accessible Seating:
 - 1. Provide wheel chair spaces as required by the ADA.
 - 2. Any adjacent riser area to be closed using intermediate construction.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine supporting foundations for compliance with manufacturer's requirements, including installation tolerances and other conditions affecting performance of supporting members.
- B. Check installed anchor bolts for accuracy. Verify that bearing surfaces are ready to receive the work.
- C. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and the approved shop drawings.

3.3 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.4 MAINTENANCE

- A. Owner will conduct inspections and required maintenance of grandstand to assure safe conditions.

- B. Contractor will instruct Owner's maintenance personnel on grandstand inspection procedures and provide detailed instruction of how to maintain the structure.

END OF SECTION

SECTION 14420
VERTICAL PLATFORM LIFT

PART I - GENERAL

1.01 SECTION INCLUDES

- A. All materials and labor necessary to complete the installation of the vertical platform lift.
- B. Obtain all information affecting work at job site. Include verification of field, dimensions, anchoring and storage. Verify voltages and outlets on electrical drawings.

1.02 REFERENCES

- A. The lift shall be designed and tested in accordance with ICC/A117.1, NEC and ASME A18.1 Guidelines.
- B. All designs, clearances, construction, workmanship and installation shall be in accordance with the requirements and code adopted by the authority having jurisdiction. The platform lift shall be subject to local, city and state approval prior to and following installation.

1.03 SYSTEM DESCRIPTION

A. The product described herein manufactured by The National Wheel-O-Vator Co., Inc., is a Vertical Platform Lift consisting of a machine tower with lifting platform, selected and dimensioned to provide adequate lifting height to suit the individual building requirements. The lift can be used either indoors or outdoors to vertically transport a wheelchair user or mobility-impaired person up and over a barrier thus creating access to or within a building.

B. Performance

- 1. Rated Load: 750 pound capacity
- 2. Travel Speed: **30 fpm.** (9 fpm available)
- 3. Lifting Height: 12'-0" (Verify)_____
- 4. Platform size: 37" x 51", with non-skid surface

1.04 SUBMITTALS

- A. Submit drawings or manufacturers literature for approval. Drawings shall show dimensional and wiring requirements.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Company with not less than twenty (20) years of experience in the design and fabrication of vertical platform lifts.
- B. Technical Services: Manufacturer and authorized dealer shall work with architects, engineers and contractors to adapt the platform lift product to the design and structural requirements of the building, site, and code requirements.

1.06 WARRANTY

A. Unit shall have a four (4) year limited parts warranty on the basic unit, including all electrical and drive system components.

1.07 MAINTENANCE

- A. Maintenance of the platform lift unit shall consist of regular cleaning of the unit and regular inspection at intervals not longer than every 6 months. Rule 10.2.1 of ASME A18.1 requires all Vertical Platform Lifts be inspected every six (6) months.

PART 2 - PRODUCT

2.01 MANUFACTURER

- A. The National Wheel-O-Vator Co. Inc., Model BC.
- B. An approved equal.

Each substitution request shall include the name of the material for which it is to be substituted and a complete description of the proposed substitutions including drawings, performance and test data, a list of projects similar in scope, photographs of existing installation, design differences and other information necessary for evaluation.

2.02 FABRICATION

- A. Platform shall be constructed of 12-gauge minimum zinc clad steel.
- B. Platform side panels must be 42" high. Side panel framework shall be a minimum of 1" x 1½" Steel or aluminum. Solid infill panels shall be a minimum of 18-gauge zinc clad steel.
- C. The mainframe support tubing shall be a combination of square and rectangular steel tubing with a minimum .120 wall thickness.
- D. Carriage platform supports shall be a minimum of 1"x 2" steel flat bar and carriage uprights shall be a minimum of ½" thick steel flat bar. Cam rollers shall be used for axial carriage guidance and cam-followers with wear pads shall be used for horizontal stability.
- E. Loaded fasteners shall be grade five or higher. Locking fasteners shall be used in all critical locations.
- F. The machine tower structural side plates shall be of 12-gauge steel and front and back covers shall be 18-gauge zinc clad steel minimum.
- G. The drive mechanism shall be a rotating nut on a stationary 1 ½" diameter Acme screw with a secondary safety nut.
- H. The motor shall be 3 HP, 230 volt, 3 phase, with inverter drive
- I. The operating control circuit shall be 24 volts.

- J. Finish shall be electro statically applied powder coating, oven baked to cure.
- K. An upper final limit switch shall be provided.
- L. Color shall be selected from manufacturers standard color or optional colors.
- M. A constant pressure up/down control switch shall be installed at each landing level and on the platform.
- N. When not installed with a runway enclosure, the platform shall be equipped with an obstruction panel that will stop the downward travel if an obstruction is encountered.
- O. An emergency stop / illuminated alarm switch shall be provided on the car as a means of signaling for assistance in the event of an emergency.
- P. A grab rail shall be provided on the platform.
- Q. The main lift nut will be equipped with a continuous lube system to distribute lubrication between main lift nut and the Acme screw.
- R. Unit to be equipped with the “simplex” base and carriage design, which allows the carriage to be folded to reduce the shroud and carriage width to 19”, for ease of installation, without removal of any carriage attaching bolts.**
- S. Unit must be assembled and tested in factory before shipment.

2.03 ACCESSORIES

- A. A CDP-1000 – Fire Rated (B Label) flush mounted steel door and frame shall be provided. Door shall include wire mesh vision panel with delay action door closure, dead latch, dummy trim door handle and electric strike. (If used at upper landing, delete 2.02 R. If used at lower landing, delete 2.02 S.)
- B. An optional hand crank must be provided as a means of manually raising & lowering the platform.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

- A. Subcontractor Qualifications: A company that is listed as an authorized National Wheel-O-Vator dealer.
- B. Electrical devices, services and final connections shall be by a qualified electrician.

3.02 INSTALLATION

- A. Unit shall be installed and operated in accordance with the ICC/A117.1, NEC and ASME A18.1 Guidelines.
- B. A dedicated electrical circuit with a lockable service disconnect switch rated per Table 1 shall be supplied by the electrical contractor at job site. (Depending on local electrical codes, a G.F.I. device may be required.) Please confer with lift contractor to determine appropriate motor for specified applications.

OVERCURRENT PROTECTIVE DEVICE RATINGS			
HP	VOLTAGE (Single Phase)	DUAL ELEMENT FUSE TIME DELAY	INVERSE TIME BREAKER
3/4 HP.	115V	20A	30A
1 HP.	115V	30A	30A
1 1/2 HP.	115V	30A	30A
3/4 HP.	230V	12 to 14 A	20A
1 1/2 HP	230V	12 to 14 A	20A
3 HP	230V	15A	20A

- C. Coordinate work with general contractor.
- D. Leave standard electrical connection drawings with electrical contractor to make final electrical connection.
- E. The installation of the vertical platform lift shall be made in accordance with the approved plans and specifications and the manufacturers installation instructions.

3.03 FIELD QUALITY CONTROL

- A. Load the vertical lift to rated capacity and test for several cycles to insure proper operation. No mechanical failures shall occur and no wear that would affect the reliability of the unit shall be detected.

END OF SECTION