NOVA SOUTHEASTERN UNIVERSITY

Criteria Manual of Design and Specifications Standards

for

Design Professionals

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Divisions 00 through Divisions 14

Nova Southeastern University

Facilities Design and Construction

3301 College Avenue

Fort Lauderdale, Florida 33314-7796

Tel: 954.262.8831

CRITERIA MANUAL OF DESIGN AND SPECIFICATION STANDARDS FOR DESIGN PROFESSIONALS

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DIVISION 01 GENERAL REQUIREMENTS

ARTICLE 1 - GENERAL PROVISIONS

1.1 BASIC DEFINITIONS:

1.1.1 The Construction Documents

The Construction Documents consist of the Legal Advertisement Covering Opening of Bids, Instructions to Bidders, the Construction Performance and Guarantee Bond, if required, the Sworn Statement on Public Entity Crimes, the Trench Safety Compliance Statement, Special Provisions for Compliance with M/WBE Subcontracting Assistance Levels (if applicable), Conditions of the Contract (general, special and other conditions), the Plans, the Specifications and Addenda, the Bid Proposal and Accepted Alternates, List of Subcontractors, Licensure Certification, Certificate of Insurance, all incorporated in the Contract before it's execution, together with this Agreement and all Modifications thereto. A Modification is (1) a Field Order, a minor change in the Contract Work which does not amend or alter the Contract sum or time or (2) a Change Order, a written order prepared by A/E approved and executed by Nova Southeastern University which authorizes a change in the Contract Work and/or an adjustment in the Contract amount or Contract time.

1.1.2 The Contract

The Construction Documents form the Contract for construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either oral or written. The Contract may be amended or modified only by a Modification. The Construction Documents shall not be construed to create a contractual relationship of any kind (1) between A/E and Contractor, (2) between Nova Southeastern University and a Subcontractor or Sub-subcontractor, or (3) between any persons or entities other than Nova Southeastern University and Contractor. A/E shall, however, be entitled to performance and enforcement of obligations under the Contract Intended to facilitate performance of A/E's duties.

1.1.3 The Work

The term "Work" means the construction and services required by the Construction Documents, whether completed or partially completed, and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill its obligations. The Work may constitute the whole or a part of the Project.

1.1.4 The Project

The Project is the total construction of which the Work performed under the Construction Documents may be the whole or a part and which may include construction by Nova Southeastern University or by separate contractors.

1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Construction Documents, wherever located and wherever issued, schematically showing the design, location, and dimensions of the Work, as appropriate generally including plans, elevations, sections, details, schedules and diagrams. The Drawings are intended to show general arrangements, design and extent of Work, and are not intended to serve as Shop Drawings.

1.1.6 The Specifications

The Specifications are that portion of the Construction Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work and performance of related services. Specifications are separated into titled divisions for convenience of reference only, and shall not be interpreted as establishing divisions for the Work, trades, Subcontracts or extent of any part of the Work. The Specifications is the

volume(s) usually assembled for the Work which may include the Instructions to Bidders, Bidding Requirements, Sample forms, Conditions of Contract and Specifications.

1.1.7 Document Control

As used therein shall mean the Owner's representative for the purpose of being the custodian of all plans, documents, correspondence and drawings for the project.

1.1.8 Acceptance

As used herein Acceptance shall mean that all of the work required by the contract (or by the individual work order issued under the contract) is fully executed and completed in accordance with the plans and specifications so that no work remains to be completed. This shall require and include that all close-out documentation be fully completed, submitted, and approved.

1.1.9 Final Completion

Final Completion shall have the same definition and be used interchangeably with Acceptance.

1.1.10 Chief Building Official

The officer or other designated authority, or their duly authorized representative charged with the administration and enforcement of the Florida Building Code (FBC) which for purposes of construction on Nova Southeastern Univesity owned property is that individual so designated by the City of Fort Lauderdale.

1.1.11 Local Governmental Review

The Local Government Review ("LGR") refers to the review of Capital Improvement Projects to ensure consistency with local comprehensive master developmental plans and local land development regulations.

1.1.13 Document Control

Document Control as used herein shall mean the Nova Southeastern University Representative for the purpose of being the custodian of all plans, documents, correspondence and drawings for the project.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 The Contract is binding on the date of Award by Nova Southeastern University. Before commencing any Work, Contractor shall furnish the following: (a) Contract Bond(s) as provided in Article 11.1 evidence of insurance as provided in Article 11.3 a signed Lump Subcontract form and Licensure Certification form. Failure of Contractor to file with Nova Southeastern University an acceptable bond and insurance as provided for in Article 11 within twenty (20) calendar days from the date of the Award shall be considered just cause and 1.2.2 Nova Southeastern University may annul and void the Award and declare forfeiture of the proposal guarantee or a good faith deposit in liquidation of all damages sustained.

1.2.3 Failure of Contractor to execute the Contract within forty-five (45) calendar days of the Award may be just cause for Nova Southeastern University to annul and void the Award. Award may then be made by Nova Southeastern University to the next lowest responsible Bidder or the Work may be re-advertised or may be constructed by day labor, or any other means necessary at Nova Southeastern University's discretion.

1.2.4 Execution of the Contract by Contractor is a representation that Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, correlated personal observations with requirements of the Construction Documents, and reported to University any error, inconsistency or omission, or variance with applicable laws, codes and regulations.

1.2.5 The intent of the Construction Documents is to include all items necessary for the proper execution and completion of the Work by Contractor including all labor and materials, equipment, implements, machinery, tools, storage, apparatus and means of transportation necessary for the proper execution of the Work. The Construction Documents are complementary and what is required by one shall be as binding as if required by all; performance by a Contractor shall be required only to the extent consistent with the Construction Documents and reasonably inferable from them as being necessary to produce the intended results.

1.2.6 Reference in the Specifications to manufacturers 'specifications and instructions means the latest edition in effect at the date of bidding.

1.2.7 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings will not control Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. No responsibility, direct or implied, is assumed by Nova Southeastern Univerity or A/E for omission or duplication by Contractor or Subcontractors due to real or alleged error in organization of the Construction Documents.

1.2.8 Unless otherwise stated in the Construction Documents, words which have well-known technical or construction industry meanings are used in the Construction Documents in accordance with such recognized meanings.

1.3 OWNERSHIP AND USE OF DOCUMENTS

1.3.1 The Drawings, Specifications and other related documents such as but limited to any electronic files that are intended for use in the planning, design, construction and maintenance processes of any capital or physical plant improvements of the Nova Southeastern University campus created by the Design Professionals, Vendors and Contractors whose intent are to be furnished to a Contractor for use as a capital improvement, repairs, renovations propjects are and shall remain the property of Nova Southeastern University. These documents shall include but are not limited to any electronic design and drafting media such as Autodesk CADD, Revit, Adobe Acrobat, Photoshop, PDF, JPG, Microsoft Word, Excel and renderings. All copies may be retained. Neither Design Professional, Vendor, Contractor nor any Subcontractor, sub-subcontractor or material or equipment supplier shall own or claim a copyright on the drawings, specifications, files and/or schedules and other documents prepared in connection with the Work. They are furnished to or by Contractor for use solely with respect to this Project and are not to be used by Contractor, any Subcontractor, Sub-subcontractor or material or equipment supplier on other Projects or for additions to this Project outside the scope of the Work without Nova Southeastern University specific written consent.

1.4 CAPITALIZATION

1.4.1 Terms capitalized in these General Conditions include but are not limited to those which are (1) specifically defined, or (2) titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the Construction Documents.

1.5 INTERPRETATION

1.5.1 In the interest of brevity, the Construction Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5.2 It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not

specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment, such words shall be interpreted in accordance with that meaning.

1.5.3 Where there is a discrepancy, Supplementary and Special Conditions are intended to modify and take precedence over General Conditions. In the event of a discrepancy between the drawings and specifications, the specifications shall be followed. Anything shown in one and not the other, and anything obviously necessary to complete the Project and achieve the intended result although not shown or described in the one or the other, shall be brought to the attention of the A/E, and if so directed by the A/E shall be provided or performed by the Contractor as part of its Contract.

ARTICLE 2 – OWNER (Nova Southeastern University)

2.1 DEFINITION

2.1.1 Owner refers to the Nova Southeastern University located in Fort Lauderdale, Florida or any of its authorized representatives.

2.2 INFORMATION AND SERVICES REQUIRED OF

2.2.1 Nova Southeastern University will furnish surveys in the Specifications. Nova Southeastern University may make available upon request soil borings for information only but such are not to be relied on by the contractor.

2.2.3 All easements and rights-of-way will be procured and paid for by the Nova Southeastern University unless otherwise specifically provided in the Construction Documents.

2.2.4 Information or services under Nova Southeastern University control shall be furnished by University with reasonable promptness to avoid delay in orderly progress of the Work.

2.2.5 Unless otherwise provided in the Construction Documents, Contractor will be furnished free of charge one (1) copies of drawings and the specifications hard paper copy and Adobe Acrobat (.PDF) file that contains the construction documents for record and use for the contractor or vendor's use.

2.2.6 The foregoing are in addition to other duties and responsibilities of Nova Southeastern University enumerated herein and especially in respect to Article 6 (Construction by Nova Southeastern University or by Separate Contractors), Article 9 (Payments and Completion) and Article11 (Insurance and Bonds).

2.3 NOVA SOUTHEASTERN UNIVERSITY'S RIGHT TO STOP THE WORK

2.3.1 If Contractor fails to correct Work which is not in accordance with the requirements of the Construction Documents as required by Paragraph 12.2, or fails to carry out Work in accordance with the Construction Documents or at the A/E's direction, University may, in writing, order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of Nova Southeastern University to stop the Work shall not give rise to a duty on the part of University to exercise this right for the benefit of Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3. Such order, properly given due to contractor's failure as defined above, shall not create the right for the contractor to receive a time extension or any excusable or compensable delay.

2.4 NOVA SOUTHEASTERN'S RIGHT TO CARRY OUT THE WORK

2.4.1 If Contractor defaults or neglects to carry out the Work properly and diligently in substantial accord and compliance with the Project Schedule(s) furnished to and acceptable to A/E, or if Contractor fails or refuses to carry out the Work in accordance with the Construction Documents, University reserves the right to notify Contractor, in writing, listing the specific items to be performed and the time in which performance is to be accomplished and, if not performed or proceeded with within the time specified, University may, without prejudice to other remedies University may have, take over the Work or such portion thereof as may be in default, and correct and make good the deficiencies. In such case, the cost thereof, including compensation for A/E's additional services and expenses made necessary by such default, neglect or failure, may be deducted from any amount due or to become due Contractor from University. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor or surety shall pay the difference to University.

2.5 NOVA SOUTHEASTERN UNIVERSITY'S RIGHT TO REQUIRE DOCUMENTATION & AUDIT

2.5.1 Nova Southeastern University may, as it deems necessary, require from Contractor support and/or documentation for any submission made by Contractor to A/E and/or University. University shall have access, and contractor upon execution of the contract gives the University unrestricted access during normal working hours, to all Contractor's records relating to this project including hard copy as well as electronic records for a period of two years after project acceptance.

ARTICLE 3 – CONTRACTOR

3.1 DEFINITION

3.1.1 Contractor is the person; firm or corporation authorized to do business in the State of Florida and properly licensed or registered for the work to be performed with whom a Contract has been made with the Nova Southeastern Universitiy's for the performance of the Work described in the Construction Documents.

3.2 REVIEW OF CONSTRUCTION DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Contractor shall carefully study and compare the Construction Documents with each other and with information furnished by University pursuant to Subparagraph 2.2.1 and shall, within thirty (30) days following the date of the Award of the Contract, report to A/E and University errors, inconsistencies or omissions therein. Contractor shall not be entitled to an adjustment in the Contract Time or an adjustment in the Contract Sum if change in the Work is required due to an error, inconsistency, omission or violation that Contractor failed to timely report.

3.2.2 Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to Contractor with the Construction Documents before commencing the ordering of any material or doing any of the Work. The Contractor is responsible for all site conditions, utility locations, and coordination of the work with existing conditions. Errors, inconsistencies or omissions discovered shall be reported to A/E at once.

3.2.3 Contractor shall perform the Work in accordance with the Construction Documents and submittals approved pursuant to Paragraph 3.11.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 Contractor shall supervise and direct the Work in a manner consistent with contemporary community standards. Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Construction Documents give other specific instructions concerning these matters.

3.3.2 Contractor shall be responsible to for acts and omissions of Contractor's employees, Subcontractors and their agents and employees and other persons performing portions of the Work under the Contract and shall be responsible to A/E and University for coordination and complete execution of the Work in accordance with the Construction Documents. The Contractor shall specifically ensure that those trades which require a Master or Journeyman to trainee ratio comply with that required ratio. This shall be strictly enforced and shall be noted daily in the Contractor's Daily Log.

3.3.3 Contractor shall not be relieved of obligations to perform the Work in accordance with the Construction Documents either by activities or duties of A/E in its administration of the Contract, or by tests, inspections or approvals required or performed by persons other than Contractor.

3.3.4 Contractor shall be responsible for inspection of portions of Work already performed under the Contract to determine that such portions are in proper condition to receive subsequent Work.

3.3.5 Contractor shall submit to A/E and University's authorized representative each day a daily work report for the preceding workday. The daily work report shall show the date, name and number of each workers by trade, including foreman, if any, employed on such date, excluding, however, all other supervisory employees whose compensation shall not be considered an element of cost for any purpose hereunder, the actual number of hours employed on the work, the character of the work that is being done and wages paid or to be paid to the worker(s). The daily report shall show the materials furnished and the amount paid or to be paid there for. In addition to rendering daily work reports to A/E and University's authorized representative.

3.3.6 Contractor shall, when any item of Work to be paid under time and material of a Work Authorization Order has been completed, render an itemized statement to University showing the total amount expended for each class of labor and each kind of material on account of each item of such Work including each employee of the contractor or any subcontractor, sub-subcontractor or any other labor by name, hours worked per day devoted to the T & M work and the payroll records for each. Contractor shall enforce strict discipline and good order among Contractor's employees and other persons carrying out the Contract including its Subcontractors and Sub-subcontractors. Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to the Contract. All of Contractor's

employees and those of its Subcontractors and Sub-subcontractors shall be required to be readily identifiable as same by either badge or clothing. All subcontractors, sub-subcontractors, and other levels of service providers shall be properly licensed or registered.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Construction Documents, Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, storage, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work as part of the contract price.

3.4.2 All labor and materials described in the Construction Documents shall be executed in a thoroughly substantial and workerlike manner. All materials, fixtures and apparatus shall be new and first class in every respect and shall be delivered to the Site and installed and maintained in a workerlike and undamaged condition. Contractor shall be responsible for the care and protection of all materials, equipment and supplies delivered to the site and all materials sold by manufacturer in sealed packages shall be so delivered to the Site. Contractor shall take particular care to ensure the work to be free from water intrusion and/or excessive moisture.

3.5 SUBSTITUTIONS

3.5 1 Contractor may be required by A/E or University to furnish, in writing, a complete statement of the origin, composition and manufacturer of any materials or equipment to be used in the Work.

If a certain brand of materials or equipment is specified in the Construction Documents, it is required for the purpose of establishing a level of quality desired or purpose designated. Should Contractor find it necessary or desirable to use a material, equipment, product or system other than that specified, Contractor shall secure from Nova Southeastern University, through A/E, written approval for the use of the alternate materials, equipment, product or system. Contractor shall make such request, in writing, not later than forty-five (45) days after the Award of the Contract and before ordering any materials requiring approval. Nova Southeastern University is not obligated to consider Requests for Substitution or resubmittal of previously rejected substitutions after forty-five (45) days. University is not obligated to approve Requests for Substitutions and has the discretion to require Contractor to provide the materials as specified in the Construction Documents. In no case shall Contractor be entitled to additional time and/or money arising out of Board's failure to approve Requests for Substitutions.

Requests shall be submitted as follows:

1. Submit five (5) copies of the Request to A/E.

2. Describe in detail (complete with test reports, catalogs, brochures and black or blue line prints of drawings) the material, equipment, product or system and changes or adjustments to other Work affected. Submit samples when requested. Contractor is responsible for denoting all instances wherein the proposed substitution differs from the item specified.

3. Include “cost breakdown” of item specified and of proposed substitute for which request is made. Include costs of adjustments to other work affected. Include any variation in operating, maintenance or replacement costs, and length of time product has been available on the domestic market.

4. State amounts deducted or added to Contract amount or state “no change" in Contract amount.

5. State changes in Contract Time for completion or state "no change" in Contract Time.

3.5.3 University's decision on approval or rejection of a Request for Substitution will be final. Approval or rejection of a request to substitute will be based in part on A/E's opinion as to adaptability, durability, quality, aesthetics, contract amount change, life cycle functions or other considerations Board determines appropriate as compared to the specified or noted item(s).

3.5.4 Should University, during the course of the Work, find it necessary or desirable to use a material, equipment, product or system other than specified, University shall notify Contractor, in writing. Should Contractor accept the proposal without a change in price or time, it shall be considered an approved substitute.

3.5.5 If A/E requests a sample of a specified material, element of work or approved substitute, Contractor shall provide same. If the sample is approved, all subsequent materials used in the Work shall be equal in every respect to the sample. If the sample is not approved, Contractor shall provide an acceptable sample.

3.6 MATERIALS AND EQUIPMENT

3.6.1 Contractor warrants to University and A/E that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Construction Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Construction Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective. Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by Contractor, improper or insufficient maintenance, by others or improper operation by others. If required by A/E and/or University, Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.7 TAXES

Contractor shall pay sales taxes for the Work or portions thereof provided by Contractor which are legally enacted when bids are received or negotiations concluded, whether or not effective or merely scheduled to go into effect.

3.8 PERMITS, FEES AND NOTICES

3.8.1 Contractor shall secure and pay for all required permits and licenses necessary for proper execution and completion of the Work.

3.8.2 Contractor shall comply with and give notices required by all laws, ordinances, rules, regulations and lawful orders of public authorities bearing on performance of the Work, including but not limited to WASA, DOT, OSHA, DERM and HRS and including but not less than encounter with substances requiring special handling or specific licensure such as but not limited to asbestos, lead and soil contamination.

3.8.3 While it may not be Contractor's responsibility to ascertain that the Construction Documents are in accordance with applicable laws, statutes, ordinances, building codes and rules and regulations, if Contractor observes that portions of the Construction Documents are at variance therewith, Contractor shall promptly notify A/E and Nova Southeastern University, in writing, and necessary changes shall be accomplished by an appropriate Modification.

3.8.4 If Contractor performs any portion of the Work and knows or should have known it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to A/E and Nova Southeastern University, Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

3.9 SUPERINTENDENT

3.9.1 Contractor shall employ a competent English superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall not be replaced without University's prior consent. The superintendent shall represent Contractor and communications given to the superintendent shall be as binding as if given to Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case. The superintendent and the major Subcontractors' superintendents shall be fluent in English.

3.9.2 Contractor shall at University’s request designate a replacement superintendent or other representative if University determines that the Contractor's designated superintendent is not performing the work to Board's satisfaction.**3.10 CONTRACTOR'S PROJECT SCHEDULE**

3.10.1 General Contractor shall prepare and maintain a detailed progress schedule demonstrating fulfillment of all Contract requirements ("Schedule"), and shall utilize the Schedule for scheduling, coordinating and monitoring all Work under the Contract. Precedence format critical path method ("CPM") techniques for scheduling shall be utilized. The principles and definitions of the terms shall be as set forth in the Associated General Contractors of America, Inc. Manual, "The Use of CPM in Construction, A Manual for General Contractors and The Construction Industry," Copyright 1976; however, in the case of a discrepancy the provisions of this Article shall govern.

The Schedule shall be cost loaded for Alternate A and resource loaded (cost and man hours) for Alternates B and C based on the Schedule of Values as approved by the A/E. The Schedule and all reports shall be prepared as specified in Alternates A, B and C herein. A copy of each schedule, formatted and readable by Primavera Project Planner v. 6.0 scheduling software, or as mutually agreed shall be provided to University for the initial schedule and each update.

Details relating to the production of schedule reports and samples of required reports may be found in SECTION 013100 of the technical specifications. If there is any conflict between the General Conditions and Section 013100, the most stringent interpretation will apply.

Projects, for purposes of this section, are as follows:

Alternate A -for smaller projects up to $600,000

Alternate B - for projects in the range of $600,000 to $3,999,999 including projects of unusual complexity or with critical time requirements. For the university campus

Alternate C - for projects of $4 million and above for campus facilities.

3.10.2 Alternate A - Projects under $600,000 if applicable

3.10.2.1 Preliminary Schedule
Within 15 days after Award of the Contract, Contractor shall prepare and submit for review by University and A/E a preliminary progress schedule ("Preliminary Schedule"), indicating the rate of progress and the order of Work that Contractor shall accomplish for the first ninety days of the Contract, and shall also submit a payment schedule indicating the percentage of the Contract Sum and the anticipated monthly payments to be made by University during the first three months of the Contract. University may withhold approval of progress payments until both schedules have been submitted by Contractor.

3.10.2.1 Initial Schedule
Within thirty (30) days after Award of the Contract, Contractor shall prepare and submit for review by University and A/E, a bar chart indicating the rate of progress and order of Work that Contractor shall accomplish for all of the Contract, incorporating the ninety day preliminary progress schedule previously submitted. The purpose of this scheduling requirement is to assure adequate planning and execution of the Work, and to evaluate the progress of the Work. The Initial Schedule shall indicate the dates for starting and completing various aspects of the Work including but not limited to on-site construction activities as well as the submittal, approval, procurement, fabrication, and delivery of major items, materials and equipment.

Contractor shall submit Logic Diagrams demonstrating the order, interdependence and sequence of activities, and related activities shall be grouped on the Initial Schedule. The Initial Schedule shall provide the Contractor's initial plan for the Work based on his understanding of the plans, specifications and addenda received through bid day. The critical path shall be highlighted or distinguished. An Activity Report shall accompany the Logic Diagrams, and for each activity the following information shall be provided:
- Activity predecessors and relationships (or successors and relationships) numbers or activity number
- Activity description
- Activity duration
- Early start date, early finish date
- Late start date, late finish date
- Slack or float
- Responsibility (contractor or subcontractor), and percentage of activity completed

If the Schedule is not submitted within thirty (30) days after Award of the Contract, Nova Southeastern University may withhold approval of progress payments.

3.10.2.3 Acceptance
The use of any particular scheduling system shall be subject to the approval of Board and A/E so as to insure the capability of producing the required reports and compatible disks for Nova Southeastern Univeristy’s use.

3.10.2.4 Monthly Updates
Monthly updates shall be included in the monthly Requisition for Payment. If updates are not incorporated with the monthly Requisition for Payment, the monthly Requisitions will be considered incomplete and will not be processed. Contractor shall be responsible to prepare, submit and maintain the schedules indicated above. Contractor may be required by University to submit a Narrative Report with each monthly update which shall include a description of current and anticipated problem areas, delaying factors and their impact, and an explanation of corrective action taken

or proposed. Failure to do so may be considered a material breach of the Contract. Any additional or unanticipated costs or expense required to maintain the Schedules shall be solely the Contractor's obligation and shall not be charged to Nova Southeastern University.

3.10.2.5 Adjustment of Contract Completion
The Contract Time will only be adjusted for cause specified in the Contract and/or when shown to be a delay of the critical path, or in excess of the available float at the time of the change issuance.

Contractor shall incorporate appropriate CPM activities into the schedule as change orders are approved by the Board.

All changes and/or additions to the Schedule must meet the approval of the A/E and Nova Southeastern University.

Contractor agrees that whenever it becomes apparent from the current monthly status review meeting or the monthly computer-produced calendar-dated schedule that phasing or Contract completion dates will not be met, it will take some or all of the following actions at no additional cost to University:

a) Increase construction manpower in such quantities and crafts as will eliminate the backlog of Work.
b) Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of Work.
c) Reschedule the Work under this contract in conformance with all other specification requirements.

Prior to proceeding with any of the above actions, Contractor shall notify and obtain approval from the University and A/E for the proposed Schedule changes. If such actions are approved, the CPM revisions shall be incorporated by Contractor into the Schedule before the next update at no additional cost to the University.

3.10.3 Alternate B - Projects from $600,000 to $3,999,999 million if applicable.

3.10.3.1 Preliminary Schedule
Within 15 days after the Award of the Contract, Contractor shall prepare and submit for review by University and A/E a preliminary progress schedule ("Preliminary Schedule") indicating the rate of progress and the order of Work that the Contractor shall accomplish for the first ninety days of the Contract, and shall also submit a payment schedule indicating the percentage of the Contract Sum and the anticipated monthly payments to be made by University during the first three months of the Contract. University may withhold approval of progress payments until both schedules have been submitted by Contractor.

3.10.3.2 Initial Schedule
Within thirty (30) days after Award of the Contract, Contractor shall prepare and submit for review by the University and A/E, an initial or precedence format critical path method schedule ("Initial Schedule") indicating the rate of progress and order of Work that Contractor shall accomplish for all of the Contract, incorporating the ninety day preliminary progress schedule previously submitted. The purpose of this scheduling requirement is to assure adequate planning and execution of the Work, and to evaluate the progress of the Work. The Schedule shall indicate the dates for starting and completing various aspects of the Work including but not limited to on-site construction activities a well as the submittal, approval, procurement and fabrication of major items, materials and equipment. The Initial Schedule shall provide the Contractor's initial plan for the Work based on his/her understanding of the plans, specifications and addenda received through bid delay. Contractor shall submit Logic Diagrams demonstrating the order, interdependence and sequence in which the activities may be completed, and related activities shall be grouped on the

network. The critical path shall be highlighted or distinguished. An Activity Report shall accompany the Logic Diagrams, and for each activity the following information shall be provided:

- Activity predecessors and relationships (or successors and relationships)
- Activity description
- Activity duration
- Early start date, early finish date
- Late start date, late finish date
- Slack or float
- Responsibility for activity (contractor or subcontractor), and percentage of activity completed

If the Schedule is not submitted within thirty (30) days after Award of the Contract, University may withhold approval of progress payments.

3.10.3.3 Acceptance
The use of any particular scheduling system shall be subject to the approval of the University and A/E so as to insure the capability of producing the required reports and compatible disks for Nova Southeastern University use.

3.10.3.4 Monthly Updates
Contractor shall provide regular monitoring and updating of the Schedule on a monthly basis with the monthly Requisition for Payment, or more frequently as required by the conditions of the Work as determined by the University. If updates are not incorporated with the monthly Requisition for Payment, the monthly Requisition will be considered incomplete and will not be processed. Contractor shall provide the University and A/E with monthly Update Reports and a revised and/or updated schedule diagram indicating progress achieved and activities commenced or completed within the last month, revising the Activity Report previously described, and indicating any revisions in the Logic Diagrams and critical path.

Contractor shall also submit a Narrative Report with each monthly update which shall include a description of current and anticipated problem areas, delaying factors and their impact, and an explanation of corrective action taken or proposed. If the Project is behind schedule, Contractor shall indicate what measures it will take in the next thirty days to put the Work back on schedule.

Contractor shall be responsible to prepare, submit, and maintain the schedules indicated above, and the failure to do so may be considered a material breach of the Contract. Any additional or unanticipated costs or expense required to maintain the schedules shall be solely Contractor's obligation and shall not be charged to Nova Southeastern University.

3.10.3.5 Adjustment of Contract Completion
The Contract Time will only be adjusted for cause specified in the Contract and/or when shown to be a delay of the critical path, and in excess of the available float in the work at the time of the change issuance.

Contractor shall incorporate appropriate CPM activities into the schedule as change orders are approved by the Nova Southeastern University.

All changes and/or additions to the Schedule must meet the approval of the A/E and Nova Southeastern University.

Contractor agrees that whenever it becomes apparent from the current monthly status review meeting or the monthly computer-produced calendar-dated schedule that phasing or Contract completion dates will not be met, it will take some or all of the following actions at no additional cost to the Nova Southeastern University:

a) Increase construction manpower in such quantities and crafts as will eliminate the backlog of Work.

b) Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of Work.

c) Reschedule the Work under this contract in conformance with all other specification requirements.

Prior to proceeding with any of the above actions, Contractor shall notify and obtain approval from the Board and A/E for the proposed Schedule changes. If such actions are approved, the CPM revisions shall be incorporated by Contractor into the Schedule before the next update at no additional cost to Board.

3.10.4 Project of $4 million and above if applicable

3.10.4.1. Preliminary Schedule
Within 15 days after Award of the Contract, Contractor shall submit to the Unversity and A/E a preliminary progress schedule. The preliminary progress schedule may be a bar chart or other means of graphically displaying the first 90 calendar days of Work. This schedule shall also include Contractor's general approach to the remainder of the Contract Work. The preliminary progress schedule is to include no more than 200 activities.
3.10.4.2. Detailed Initial Schedule
Within thirty (30) calendar days after receipt of the Notice to Proceed, Contractor shall submit to the University and A/E three copies of the computer-produced precedence format ("Schedule"). The Schedule shall contain no Contract changes or delays which might have been included prior to its submittal. These changes will be entered into the first Schedule update.

The complete project logic diagram will contain, including restraints but excluding submittal activities, a number of activities appropriate to project and subject to approval of University and A/E. The selection and number of activities shall be subject to University and A/E approval. Each activity is to have the following on an associated computer report:
- Predecessors and relationships (or successors and relationships)
- Concise descriptions
- Responsibility code
- Duration (Work days) no greater than ten (10) work days
- Location

In addition to the above, Contractor shall provide activities for submittal of shop drawings, approval, fabrication, and delivery. Procurement activities are typically to be no less than 120 in addition to the number of Work activities. All activities of University and A/E that affect progress, and Contract-required dates for completion of all or parts of Work, shall be shown.

The detailed network diagram shall be time scaled and shall be drafted to show a continuous flow from left to right with no arrows from right to left. This time scale network is to be submitted quarterly. University may withhold approval of progress payments until said schedules have been submitted by Contractor.

Sheet size of the network diagram shall be no larger than 30" by 40". Each updated copy shall show a date of latest revision.

The critical path is to be shown on the drawn Schedule by a colored, heavy or dotted line through all critical activities.

3.10.4.3 Computer Produced Report

The network activities of the detailed Schedule diagram shall be reported to show, as a minimum, the following data output:
- Activity description
- Schedule duration
- Early start, early finish, late start, late finish
- Actual start and actual finish (by calendar dates)
- Activity percent complete
- Predecessors or successors for precedence format schedules

As a minimum, Contractor shall provide the following computer-produced report sorts:
- sequenced by activity number
- Early start subsorted by activity number
- Float or slack, from the least to the most
- Responsibility by early start
- 30 day look ahead schedule, displaying those activities that must be completed during the next updating period

3.10.4.4 Monthly Updates
Contractor shall submit to the University and A/E monthly status reports in the form of updated computer printouts and narrative reports. The updated report shall include information of the actual construction progress, sequence changes, change order, delays, and other pertinent data that affects the construction progress.

The narrative report shall include a description of problem areas, current and anticipated delaying factors, and their impact on performance of other activities and completion dates.

Five days prior to the monthly Requisition for Payment, Contractor shall review the schedule progress of the preceding month with all Subcontractors on the project, and the A/E.

The monthly schedule status report is to be included in the monthly Requisition for Payment. If the computer printout and narrative is not incorporated with the monthly Requisition for Payment, the monthly Requisition will be considered incomplete and will not be processed.

The critical path is to be shown on all updates by ensuring that float or slack is printed on each computer report.

3.10.4.5 Adjustment of Contract Completion
The Contract Time will only be adjusted for cause specified in the Contract and/or when shown to be a delay of the critical path, or in excess of the available float at the time of the change issuance.

Contractor shall incorporate appropriate CPM activities into the schedule as change orders are approved by the Board.

All changes and/or additions to the Schedule must meet the approval of the A/E and Nova Southeastern University.

Contractor agrees that whenever it becomes apparent from the current monthly status review meeting or the monthly computer-produced calendar-dated schedule that phasing or Contract completion dates will not be met, it will take some or all of the following actions at no additional cost to Nova Southeastern University:

a) Increase construction manpower in such quantities and crafts as will eliminate the backlog of Work.

b) Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of Work.

c) Schedule the Work under this contract in conformance with all other specification requirements.

Prior to proceeding with any of the above actions, Contractor shall notify and obtain approval from the Board and A/E for the proposed Schedule changes. If such actions are approved, the CPM revisions shall be incorporated by Contractor into the Schedule before the next update at no additional cost to the Nova Southeastern University.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 Contractor shall maintain at the Site one record copy of the Drawings, Specifications, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction and, in addition, approved Shop Drawings, Project Schedules, Product Data, Samples and other required submittals. These shall be available to A/E and Nova Southeastern University and shall be delivered to A/E for submittal to University upon completion of the Work.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specifically prepared for the Work by Contractor or subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work. Contractoror Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor shall not use the A/E's contract drawings as shop drawings, but contractor shall require these entities to produce and submit such documents independently.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Construction Documents. The purpose of their submittal is to demonstrate, for those portions of the Work for which submittals are required, the way Contractor proposes to conform to the information given and the design concept expressed in the Construction Documents. Review by A/E is subject to the limitations of Subparagraph 4.2.7.

3.12.5 Contractor shall submit for A/E approval (copy to Owner for information) a proposed submittal schedule. This submittal schedule shall identify all required and planned submittals showing at a minimum the clear and unambiguous identity of the submittal including all shop drawings, product data samples, and similar submittals, the date they are to be transmitted to the A/E, and the date by which approval is required to maintain and coordinate with the construction schedule. The submittal schedule shall allow a minimum of 14 calendar days for review and approval/disapproval by the A/E in all cases and, where the amount or complexity of the submittal may require additional time, it shall be noted by the A/E and accommodated by the Contractor. Submittals shall be scheduled and produced with sufficient time for appropriate review and re-submittal and re-review as required that the process shall not cause delay to the Work or any activities of the A/E or University or separate Contractors. Contractor shall review, approve and submit to A/E all Shop Drawings, Product Data, Samples and similar submittals required by the Construction Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of A/E or University or of separate Contractors. Submittals made by the Contractor which are not required by the Construction Documents may be returned without action. Submittals shall be properly identified as specified or as A/E may require. At the time of submission, Contractor shall inform A/E, in writing, of any deviation in the submittals from the requirements of the Construction Documents. Contractor shall maintain a Shop Drawing Submittal log, copies of which shall be submitted to the A/E and University on a weekly basis.

3.12.6 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, Contractor represents that it has determined and verified materials, field measurements, field construction criteria, catalog numbers and similar data, and that Contractor has checked and coordinated information contained within such submittals with the requirements of the Work and the Construction Documents. Contractor shall not be relieved of responsibility for deviations from requirements of the Construction Documents by A/E's approval of Shop Drawings, Product Data, Samples or similar submittals unless Contractor has specifically informed A/E and Nova Southeastern University, in writing, of such deviation at the time of submittal and A/E and University have given written approval to the specific deviation. Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by A/E's approval thereof.

3.12.6 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, Contractor represents that it has determined and verified materials, field measurements, field construction criteria, catalog numbers and similar data, and that Contractor has checked and coordinated information contained within such submittals with the requirements of the Work and the Construction Documents. Contractor shall not be relieved of responsibility for deviations from requirements of the Construction Documents by A/E's approval of Shop Drawings, Product Data, Samples or similar submittals unless Contractor has specifically informed A/E and Nova Southeastern Univeristy, in writing, of such deviation at the time of submittal and A/E and University have given written approval to the specific deviation. Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by A/E's approval thereof.

3.12.7 Contractor shall make any corrections required by A/E and shall resubmit the required Shop Drawings, Product Data, Samples or similar submittals until approved. Contractor shall direct specific attention, in writing, or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by A/E on previous submittals.

3.12.8 Informational submittals upon which A/E is not expected to take responsive action may be so identified in the Construction Documents.

3.12.9 When professional certification of performance criteria of materials, equipment, product or system is required

by the Construction Documents, A/E shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.12.10 No portion of the Work requiring a Shop Drawing, Product Data, Sample or similar submittal shall be commenced until the submittal has been approved by A/E. All such portions of the Work shall be in accordance with the approved Shop Drawings, Product Data, Samples or similar submittals.

3.12.11 Shop Drawings, Product Data, Samples and similar submittals shall be marked so that items which constitute information not pertaining to the equipment specified shall be so indicated. All components which are provided as "optional" by manufacturer and required hereinafter shall also be marked. Failure to comply with the preceding will result in A/E's disapproval of Shop Drawings, Product Data, Samples and similar submittals.

3.12.12 Shop Drawings, Product Data and Samples
The Contractor shall copy Document Control on all correspondence (incoming/outgoing) and provide copies of all plans, documents, drawings, and shop drawings for the project.

3.13 USE OF SITE

3.13.1 Contractor shall confine operations at Site to areas permitted by law, ordinances, and the Construction Documents and shallot unreasonably encumber the Site with materials or equipment.

3.13.2 Contractor shall supply additional storage on Site if required by University for storage of furniture, appliances, equipment, materials and supplies.

3.14 CUTTING AND PATCHING

3.14.1 Contractor shall be responsible for cutting, fitting or patching required completing the Work or to make its parts fit together properly.

3.14.2 Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of University or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. Contractor shall not cut or otherwise alter such construction by Nova Southeastern University or a separate contractor except with written consent of University and of such separate contractor; such consent shall not be unreasonably withheld. Contractor shall not unreasonably withhold from University or a separate contractor Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP AND SALVAGE

3.15.1 Contractor shall keep the premises and surrounding areas free from accumulation of waste material or rubbish caused by operations under the Contract and shall maintain the premises in a clean, safe manner. Except as otherwise provided in the Construction Documents, the Contractor shall leave the structure(s) and Site clean upon completion of the Work. The roofs, floors, gutters, glass and fixtures shall be free from soil, cement and/or paint. Nothing will be accepted that has been dented, chipped or broken during the construction, or that may have been stained, scratched or discolored. This final cleanup must be performed within the Contract Time.

3.15.2 If Contractor fails to clean up as provided in the Construction Documents, Board may do so and the cost thereof may be deducted from payment due or to become due.

3.15.3 All removed salvage items and materials (except any such stipulated as "not wanted" by the Nova Southeastern University) shall be delivered by Contractor to Nova Southeastern University maintenance warehouse.

3.15.4 Contractor shall prepare itemized receipts, in quadruplicate or more if required, giving pertinent description(s) of items and materials delivered. Receipts shall be signed by the Maintenance Receiving Department which shall retain one receipt. Contractor shall retain one receipt and shall distribute the other receipts to applicable Subcontractor(s) and A/E.

3.15.5 Removed salvage items and materials which University advises Contractor are not wanted are the property of Contractor and shall be removed from the Site within a reasonable time or within twenty four (24) hours after written notification by the University that the items and/or materials are interfering with operations at the Site.

3.16 ACCESS TO WORK

Access to an exit or any portion of the Site for the delivery of any and all materials, equipment and supplies by Contractor, Subcontractor, Sub-subcontractor, manufacturer, supplier, distributor, laborer, or any other person, shall be permitted in strict compliance with the directives, rules, conditions and requirements of Board, as directed by A/E and coordinated through the University's representative.

3.17 ROYALTIES AND PATENTS

Contractor shall pay all royalties and license fees. Contractor shall defend suits or claims for infringement of patent rights and shall hold Nova Southeastern University harmless for loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Construction Documents. However, if Contractor knows or has reason to believe that the required design process or product is an infringement of a patent, Contractor shall be responsible for such loss unless such information is properly furnished to A/E.

3.18 INDEMNIFICATION

3.18.1 The Contractor shall indemnify and hold harmless the Owner, and its officers and employees, from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorneys' fees, to the extent caused by the failure of Contractor to provide services in accordance with the contract and to an acceptable standard, or negligence, recklessness, or intentionally wrongful conduct of the Contractor and persons employed or utilized by the Contractor in the performance of this Contract.

3.18.2 The remedy provided to an indemnitee by Paragraph A shall be in addition to and not in lieu of any other remedy available under this Contract or otherwise.

3.18.3 The remedy provided to an indemnitee by this Contract shall survive this Contract and shall not be limited in any manner by acceptance, final completion, or final payment.

3.18.4 A claim for indemnify pursuant to this Contract shall be commenced within the period established under Florida law for commencement of an action founded on the design, planning, or construction of an improvement to real property.

3.18.5 The provisions of this Article are severable and if, for any reason, any one or more of the provisions contained in the Article shall be held by a court of competent jurisdiction to be invalid, illegal, against public policy, or unenforceable in any respect, the invalidity, illegality, being against public policy, or unenforceability shall not affect any other provision of this Article which shall remain in effect and beconstrued as if the invalid, illegal, against public policy, or unenforceable provision had never been contained in the Article.

3.18.6 The obligation of Contractor to hold harmless, indemnify and defend pursuant to Paragraph 3.18 shall be limited to the greater of:

1. The amount specified as the minimum limit of indemnity in Paragraph b of the Required Limits of Insurance & Indemnity form or

2. The amount of valid and collectible insurance available to the indemnitor with respect to the indemnitor's indemnity obligation.

3.18.3 In any and all claims against an indemnitee by any employee of Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification pursuant to Paragraph 3.18 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

3.18.4 The following persons or organizations shall be deemed to be indemnities:

.1 Nova Southeastern University and its members, officials, officers and employees, agents and authorized representatives, and if, prior to the loss, University has agreed to include such persons or organizations the following shall be deemed to be indemnities:
a) A/E and its officers and employees,

3.18.5 The obligations of Contractor shall not extend to the liability of the A/E, and their respective officers and employees arising out of:

.1 the preparing, approving, or failure to prepare or approve maps, drawings, opinions, reports, surveys, change orders, designs or specifications, or

.2 the giving of or the failure to give directions or instructions by the A/E, and their respective officers and employees provided such giving or failure to give is the primary cause of the injury or damage.

3.18.6 The remedy provided to an indemnitee by this indemnification shall be in addition to and not in lieu of any other remedy available under the Contract or otherwise. Except as specifically provided in Clause 3.18.2.2, this indemnification obligation shall not be diminished or limited in any way to the total limits of insurance required in the Contract or otherwise available to Contractor or any Subcontractor. The limit on the amount of the indemnity pursuant to Subparagraph 3.18.2 applies only to the contractual indemnity resulting from Paragraph 3.18. The limit on the amount of the indemnity pursuant to Subparagraph 3.18.2 is not applicable to any right to indemnity or contribution or any other remedy which would exist in favor of an indemnitee in the absence of Paragraph 3.18.

3.18.7 The remedy provided to an indemnitee shall survive the Contract and shall not be limited in any manner by Acceptance, Final Completion or final payment. A claim for indemnity pursuant to Paragraph 3.18 shall be commenced within the period established under Florida law for commencement of an action founded on the design, planning, or construction of an improvement to real property.

3.18.8 Contractor hereby acknowledges the receipt of Ten Dollars ($10.00) and other good and valuable consideration as part of the Contract Sum from University and A/E which has been paid to Contractor as specific consideration for the indemnification provided herein and is incorporated as a deduction in the bid amount.

3.19 TESTING

3.19.1 The University may, at its sole discretion, identify additional tests which shall be performed by the Contractor on the projector parts of the project as directed. Such testing may include but is not limited to water intrusion, building envelope security, various roofing, and building moisture content testing.

3.19.2 Where such testing is required, it shall be the responsibility of the University to procure and pay for such testing services from properly certified testing firms contracted with the University. It shall further be the responsibility of the Contractor to schedule and ensure the proper conduct of such testing at times when that testing is appropriate in the construction of the project.

3.19.3 The Contractor shall include such testing in the Contractor's construction schedule when first submitted to the University if such tests are designated at the time of award, or, if such testing is determined to be necessary after award, the Contractor shall include same in the construction schedule at its next regular monthly submittal of that schedule with its next regular Application for Payment after receiving direction to include such testing.

3.19.4 The Contractor shall coordinate with the Architect and testing firm to ensure the appropriateness of the schedule for each required test and the availability of the Architect's appropriate representatives to observe such tests. The Architect shall observe, certify the proper testing procedures, and certify the results as either acceptable or unacceptable.

3.19.5 In the event that the project or any portion thereof does not satisfactorily perform when any required test is administered, the Contractor shall immediately take such action as is required to correct the condition(s) causing the unacceptable performance and re-test at the Contractor's own expense until the project or that portion of the project performs acceptably when tested. Payment to the Contractor shall be adjusted appropriately in the event of any unacceptable test results.

ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT OR ENGINEER (A/E)

4.1.1 A/E is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture or engineering identified as such in the Contract and is referred to throughout the Construction Documents as if singular in number. The term A/E means A/E or its authorized representative.

4.1.2 Duties, responsibilities and limitations of authority of A/E as set forth in the Construction Documents shall not be restricted, modified or extended without written consent of Board. Consent shall not be unreasonably withheld.

4.1.3 In case of termination of employment of A/E, Board shall appoint an A/E, whose status under the Construction Documents shall be that of the former A/E.

4.2 A/E's ADMINISTRATION OF THE CONTRACT

4.2.1 A/E will provide administration of the Contract as described in the Construction Documents (1) during construction, (2) until final payment is due, and (3) during the guarantee period described at Paragraph 12.2. A/E will advise and consult with the University. A/E is the agent of University only to the extent provided in the Construction Documents unless otherwise modified by written instruments in accordance with other provisions of the Contract.

4.2.2 A/E will visit the site at least bi-weekly or more often as appropriate to the stage of construction to become familiar with the progress and quality of the completed Work and to determine, in general, if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Construction Documents. A/E will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work. On the basis of on-site observations, A/E and its engineers and other consultants will keep Board informed of the progress and quality of the Work and will endeavor to guard the University against defects and deficiencies in the Work.

4.2.3 A/E will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures or for safety measures and programs in connection with the Work since these are solely Contractor's responsibility as provided at Sub-paragraph 3.3.1. While A/E is not responsible for Contractor's Project Schedules or failure to carry out the Work in accordance with the Construction Documents nor does A/E have control over or charge of acts or omissions of Contractor, Subcontractor, or their agents or employees or any other persons performing portions of the Work, A/E will enforce the faithful performance of Contract and assure that the Work has been or is being performed in accordance with the Construction Documents. Despite A/E's lack of control and/or responsibility for the aforesaid, A/E will provide written notice to Board if it observes or has reason to become aware of any defect or non-conformance with the Construction Documents.

4.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Construction Documents or when direct communications have been specially authorized by Nova Southeastern University, University and Contractor shall endeavor to communicate through A/E communications by and with A/E's engineers and other consultants shall be through A/E. Communications by and with Subcontractors and material suppliers shall be through Contractor. Communications by and with separate contractors shall be through Board.

4.2.5 Based on A/E's Site observations and evaluation of Contractor's notarized Requisitions for Payment, the Schedule of Values, subcontractor partial releases and the Project Schedule, A/E shall review the Requisitions for Payment and certify to Nova Southeastern University the amounts due Contractor. Prior to issuing certification for payment, A/E shall review the status of Contractor's Construction Documents and Project Schedule and verify that the documents and/or schedules are up-to-date and accurate to the extent visual observation of the construction will disclose.

4.2.6 A/E shall also confirm that, after the first application for payment, each subsequent application shall be accompanied by subcontractor partial lien releases fully accounting for subcontractor payments due for the previous

application. If the Construction Documents and Project Schedule are not up-to-date and/or accurate, A/E shall include in its certification for payment a statement that the Construction Documents and/or Project Schedule are not up-to-date. In such event, University may (a) hold an additional 10% of amount then due Contractor until A/E verifies that the Construction Documents and/or Project Schedule are up-to-date and accurate, (b) refuse to process the Partial or Final Requisition for Payment, or (c) pay Contractor. Contractor shall provide A/E with Contractor's and Subcontractors' partial releases of claim for provision to Board prior to processing the next month's Requisition for Payment. The A/E's certification is a representation by A/E to Owner that all required items noted herein are submitted and proper and serves as a recommendation for payment only.

A/E will have authority to recommend to University the rejection of Work which does not conform to the Construction Documents. A/E will recommend that Univesity stop construction pursuant to Paragraph 2.3 when, in A/E's professional judgment, defects and deficiencies in the construction warrant that it be stopped.Whenever A/E considers it necessary or advisable for implementation of the intent of the Construction Documents, A/E will have authority to recommend to University additional inspection or testing of the Work in accordance with Subparagraph 13.5.3,whether or not such Work is fabricated, installed or completed.However, neither this authority of A/E nor a decision made in good faith to exercise or not to exercise such authority will give rise to a duty or responsibility of A/E to Contractor, Subcontractors, material and equipment suppliers, their agents or employees or other persons performing portions of the Work.

4.2.7 A/E will review and approve or take other appropriate action upon Contractor's submittals, such as Shop Drawings, Product Data and Samples, for conformance with the information givena nd the design concept expressed in the Construction Documents. A/E's approval of a separate item shall not indicate approval of an assembly in which the item functions. A/E's action will be taken with such reasonable promptness as to cause no delay in Work or in the activities of University, Contractor, or separate Contractors, and in accordance with the Contractor's approved submittal schedule while allowing sufficient time in A/E's professional judgment to permit adequate review, but in any event, A/E's action will be taken not later than 14 days from Contractor’s submittal. If A/E is required to review a submittal more than two (2) times due to incomplete or incorrect submittals by Contractor, an appropriate Change Order may be issued by A/E deducting a sum reasonably sufficient to compensate A/E from payments due or to become due Contractor as compensation for A/E's additional expenses and services made necessary by Contractor's submission of incomplete or incorrect submittals.

4.2.9 Review of submittals by A/E is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of Contractor as required by the Construction Documents. A/E's review of Contractor's submittals shall not relieve Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.11. A/E's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by A/E, of any construction means, methods, techniques, sequences or procedures. A/E's approval of a specific item shall not indicate approval of an Assembly of which the item is a component.

4.2.8 Change Orders will be prepared as provided at Article 7 for University’s approval and execution in accordance with the Construction Documents. If Contractor submits an excessive number of requests for Change Orders, unless the excessive number of requests arises from A/E errors and/or omissions in the Construction Documents, the cost thereof, including compensation for A/E's additional services and expenses made necessary by such excessive number of requests for Change Orders, may be deducted from any amount due or to become due Contractor from University.

4.2.9 A/E will review and evaluate substitutions proposed by Contractors for conformance with the Construction Documents and will recommend substitutions only when it can be demonstrated that the item specified or its successor is no longer available for purchase or that the substitution provides a clear benefit to Board in performance and/or price. A/E will not be required to take any action on requests for substitutions that are not submitted to it within forty-five (45) days after the execution of the Contract except for good cause shown or unless requested by University and, if so, the cost thereof, including compensation for A/E's additional services and expenses made necessary by such request for substitutions may be deducted from any amount due or to become due Contractor from University.

4.2.10 Upon written notice from Contractor that the Work is substantially complete as defined at Paragraph 9.8.1, A/E will inspect the Project as described at Paragraph 9.8.

4.2.11 Upon Contractor's written notice that the Work is substantially complete; A/E will inspect the Work to determine if it is ready for inspection. If A/E believes that the Work is substantially complete, A/E will provide written notice to Nova Southeastern University and Contractor. A/E and University then will conduct inspection(s) and take subsequent action as described at Paragraph 9.8.

4.2.12 Upon written notice from Contractor, A/E and University will conduct inspection(s) to determine the date of Final Completion as described at Paragraph 9.10. If A/E is required to conduct more than two (2) Final Completion inspections because of the failure of Contractor to complete punch list items in accordance with the Construction Documents, the cost thereof, including compensation for A/E's additional services and expenses made necessary by the failure of Contractor to timely complete all punch list work may be deducted from any amount due or to become due Contractor from Board.

4.2.13 Contractor shall provide A/E, which will confirm completeness and correctness of same and forward to the Nova Southeastern University for the University's review and records, the written documents required by the Construction Documents to be provided such as Warranties, Operation and Maintenance Manuals, as-built drawings, releases of claim another documents required of Contractor. A/E will process any pending Change Order requests and evaluate the assessment of liquidated damages, if any. Upon its determination that Contractor has fulfilled the requirements of the Construction Documents, A/E will issue a final Certificate for Payment.

4.2.14 If University at its option and A/E agree, A/E will provide one (1) or more project representatives to assist in carrying out A/E's responsibilities at the Site. The duties, responsibilities and limitations of authority of such Project representatives shall be set forth in an exhibit to be incorporated in the Construction Documents.

4.2.15 A/E will interpret and decide matters concerning performance pursuant to the Construction Documents on written request of either University or Contractor. A/E's response to such requests will be made with reasonable promptness, and if no agreement is made concerning the time within which interpretations required of A/E shall be furnished, A/E will furnish such interpretations within fifteen (15) days after written request.

4.2.16 Interpretations and decisions of A/E will be consistent with the intent of and reasonably inferable from the Construction Documents and will be in writing or in the form of drawings.

4.2.17 A/E's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Construction Documents and acceptable to Nova Southeastern University.

4.3 CLAIMS AND DISPUTES

4.3.1 A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, and extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between Nova Southeastern and Contractor arising out of or relating to the Contract. Claims must be made by written notice. The responsibility to substantiate claims shall rest with the party making the Claim. Decision of A/E. Claims, including those alleging an error and/or omission by A/E shall be referred initially to A/E for action as provided in Paragraph 4.4. A decision by A/E shall be required as a condition precedent to litigation of a Claim between Contractor and University as to all such matters arising prior to the date final payment is due, regardless of whether such matters relate to execution and progress of the Work. The decision by A/E in response to a Claim shall not be a condition precedent to litigation in the event (a) the position of A/E is vacant, (b) A/E has not received evidence or has failed to render a decision within agreed time limits, or (c) forty-five (45) days have passed after the Claim has been referred to A/E. In the event that Contractor disagrees with a decision of A/E, Contractor shall immediately notify Board, in writing, through A/E, setting forth the reasons and objections to such decision.

4.3.3 Time limits on Claims.
Claims by either party must be made within seven (7) days after occurrence of the event giving rise to such Claim or within seven (7) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. No Claims will be considered unless submitted in a timely manner as required by this paragraph.

4.3.4 Continuing Contract Performance.
Pending final resolution of a Claim, unless otherwise agreed in writing, Contractor shall proceed diligently with performance of the Contract and university shall continue to make payments in accordance with the Construction Documents.

4.3.5 Waiver of Claims: Final Payment.
The making of final payment shall constitute a waiver of Claims by Contractor except those expressly identified in writing to University. Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Construction Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Construction Documents, then notice by Contractor shall be given to A/E promptly before conditions are disturbed and in no event later than three (3) days after first observance of the conditions. Contractor shall document the conditions by providing A/E with photographs and written description of the conditions. A/E will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If A/E determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, A/E shall so notify Board and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within seven (7) days after A/E has given notice of the decision. If Nova Southeastern University and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to A/E for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.7 Claims for Additional Costs. No Claims for changes in the Work will be allowed by A/E unless authority for same, in writing, has been obtained from the Nova Southeastern University. If Contractor wishes to make Claim for an

increase in the Contract Sum, written notice, as provided herein, shall be given before proceeding to execute the Work. If Contractor or any Subcontractor should start on the Work prior to obtaining written approval, it will be construed as an acceptance by Contractor of such Work being required under the Contract and no future Claim for additional cost will be considered or allowed by Novaq Southeastern University. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. If Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from A/E, (2) an order by Nova Southeastern University to stop the Work where Contractor was not at fault, (3) a written order for a minor change in the Work issued by A/E, (4) failure of payment by Nova Southeastern University, (5) termination of the Contract by University, (6) Univeristy 's suspension or (7) other reasonable grounds, Claim shall be made in accordance with the procedure established herein.

4.3.8 Claims for Additional Time

4.3.8.1 If Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided for at Subparagraph8.3.2 shall be given.

4.3.8.1 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the scheduled construction. A claim for additional time due to rain will not be considered until and unless the time lost exceeds the twenty (20) day rain allowance provided for at Subparagraph 8.3.1.7.

4.3.9 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or any of the other party’s employee's or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding seven (7) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional costs or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.3.7 or 4.3.8.

4.3.10 Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

1. Damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

2. Damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Subparagraph 4.3.10 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 All matters in dispute under this Contract and/or the Contract Documents shall be resolved in the sole and exclusive venue of the Circuit Court for the 17th Judicial Circuit, in and for Broward County, Florida. Contractor shall insure each subcontract identifies this court as the venue for all disputes and that flow-down clauses are utilized by subcontractors, sub-subcontractors, and suppliers regarding this venue. Contractor shall include jury waiver clauses in each subcontract.

4.4.2 The parties hereby waive any and all right to trial by jury in an action hereunder commenced by either party in respect to this Contract or any matter arising out of this Contract, or any matter in relation to work, labor, services or materials furnished to the Project.

4.4.3 If a dispute arises between the Nova Southeastern University and Contractor regarding the scope of the Contractor's Work, or in the interpretation of the Contract Documents, and the parties hereto cannot promptly resolve that dispute, University may order, in writing, the disputed work to be performed by Contractor and the dispute shall be resolved as provided at Paragraph 4.4.1.

4.4.4 If a dispute arises between Nova Southeastern University and Contractor regarding the Contract Documents or the breach thereof, Contractor shall continue to prosecute the Work and maintain its progress, unless requested by university to suspend or delay the Work or any part thereof, or unless Contractor is terminated pursuant to Paragraph 14.2.

ARTICLE 5 – SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A Subcontractor is a person or entity other than a material manor laborer who enters into a subcontract with Contractor forth performance of any part of Contractor's Work. The term “Subcontractor" is referred to throughout the Construction Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term “Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity other than a material man or laborer who enters into a sub-subcontract with a Subcontractor for the performance of any part of such Subcontractor’s contract. The term "Sub-subcontractor" is referred to throughout the Construction Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor. The term “Sub-subcontractor" does not include separate subcontractors of a separate contractor.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 As stated in the Instructions to Bidders, Contractor shall furnish in its proposal to University the list of Subcontractors, Sub-subcontractors and material men (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work.

If the University has a reasonable objection to any proposed Subcontractor, Sub-subcontractor or material man, university will promptly notify Contractor. Contractor shall not contract with any proposed Subcontractor, Sub-subcontractor or material man to whom University has made a reasonable objection pursuant to Subparagraph 5.2.2.

5.2.2 If Nova Southeastern University has a reasonable objection to a Subcontractor, Sub-subcontractor or material man, Contractor shall propose another to whom University has no reasonable objection.

5.2.3 A Subcontractor, Sub-subcontractor or material man may be added to the list of Subcontractors, Sub-subcontractor or material men if required for performance of Change Order Work. The addition of the Subcontractor, Sub-subcontractor or material man will become a part of that Change Order Work. A listed Subcontractor, Sub-subcontractor or material man may be changed only upon written approval of Board. The request to change shall state reasons for the request and shall be accompanied by a signed and notarized release from the listed Subcontractor or Contractor's Affidavit to Nova Southeastern University that such a release is not obtainable.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 Contractor shall require each Subcontractor, to the extent of the Work to be performed by each Subcontractor, to be bound to Contractor by the terms of the Construction Documents, and to assume toward Contractor all obligations and responsibilities which Contractor, by the Construction Documents, assumes toward Nova Southeastern University and A/E. Each subcontract agreement shall preserve and protect the rights of Nova Southeastern University and A/E under the Construction Documents with respect to the Work to be performed by Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against Contractor that Contractor, by the Construction Documents, has against Nova Southeastern University. Where appropriate, Contractor shall require each Subcontractor to enter into similar agreements with its Sub-subcontractors. Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreements, copies of the Construction Documents to which the Subcontractor will be bound and, upon written request of the Subcontractor, identify to Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Construction documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

.1 Subcontractors' combined overhead and profit for Change Order Work shall not be in excess of that allowed by Nova Southeastern University for the Contractor: fifteen percent (15%) up to$10,000 and ten percent (10%) over $10,000.

5.3.2 Contractor shall fix the scope of that portion of the Work to be performed by each of the Subcontractors. Contractor shall be held liable to University for the performance of all of the Work and the Construction Documents do not attempt to fix the scope of the Work or responsibility of any Subcontractor. No Subcontractor shall, under any conditions, relieve Contractor of liabilities and obligations under this Contract and Contractor shall be solely responsible to University as provided for herein.

5.3.3 Any disputes which may arise between Contractor and any Subcontractor or between any Subcontractor and its Sub-subcontractors must be resolved between those parties. University and A/E will not undertake or be responsible for the resolution of such disputes.

5.3.4 Contractor shall be liable to University for materials furnished as provided in Article 3. Materials shall include all materials whether manufactured and/or fabricated by other persons. In the event that an agent or other representative of University approves the installation or erection of any item of material and Contractor concludes that same is not fabricated in good worker like manner, Contractor shall immediately advise the University in writing.

5.3.5 Subcontractor shall, at the University's request to Contractor, designate a replacement representative if University determines that the subcontractor's designated representative is not performing the work to University's satisfaction.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1 Each subcontract agreement for a portion of the Work is assigned by Contractor to the University provided that:

.1 Assignment is effective only after termination of the Contract by University for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which University accepts by notifying the Subcontractor in writing; and
.2 Assignments is subject to the prior rights of the surety obligated under the Bond relating to the Contract.

ARTICLE 6 - CONSTRUCTION BY NOVA SOUTHEASTERN UNIVERSITY OR BY SEPARATE CONTRACTORS

6.1 UNIVERSITY'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATECONTRACTS

6.1.1 Nova Southeastern University reserves the right to perform construction or operations related to the Project with university's own forces and to award separate contracts in connection with other portions of the Project or other construction or operations on the Site under these or similar Conditions of the Contract. If Contractor claims that delay or additional cost is involved because of such action by Board, Contractor shall make such Claim as provided in Article 4 of the General Conditions.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "contractor" in the Construction Documents in each case shall mean the contractor who executes each separate University-Contractor agreement.

6.1.3 Nova Southeastern University shall provide for coordination of the activities of its own forces and of each separate contractor with the Work of Contractor, who shall cooperate with them. Contractor shall participate with other separate contractors and Nova Southeastern University project manager in reviewing their Project Schedules when directed to do so. Contractor shall make any revisions to the Project Schedule Sum deemed necessary by Nova Southeastern University. The Project Schedule shall then constitute the schedule to be used by Contractor, separate contractors and University until subsequently revised.

6.1.4 Unless otherwise provided in the Construction Documents, when Nova Souheastern University performs construction or operations related to the Project with its own forces, the Univesity shall be deemed to be subject to the same obligations and to have the same rights which apply to Contractor under the Conditions of the Contract, including, without excluding others, those stated at Article 3, this Article 6 and Articles 10, 11 and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 Contractor shall afford the University and separate contractor's reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall connect and coordinate Contractor's construction and operation with theirs as required by the Construction Documents.

6.2.3 If part of Contractor's Work depends for proper execution or results upon construction or operations by the University or a separate contractor, Contractor shall, prior to proceeding with that portion of the Work, promptly report to A/E apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of Contractor to so report shall constitute an acknowledgment that University's or separate contractors' completed or partially completed construction is fit and proper to receive Contractor's Work, except as to defects not then reasonably discoverable.

6.2.4 Costs caused by Contractor's delays or by improperly timed activities by Contractor or defective construction shall be borne by the Contractor. 6.2.5 Should Contractor wrongfully cause damage to the Work or property of the University or separate contractors, Contractor shall assume the responsibility and liability for such damage, promptly remedying same as provided in Subparagraph 10.2.5.

6.2.6 Should Contractor be caused damage by any other contractor to the Work by reason of such other contractor's failure to properly perform its contract with the University, no action will lie against University and the University shall have no liabilities therefore, but Contractor may assert a Claim for damages against such other contractor as the third-party beneficiary under the contract between such other contractor and Nova Southeastern University.

6.2.7 Claims and other disputes and matters in question between Contractor and a separate contractor shall be subject to the provisions of Paragraph 4.3, provided the separate contractor has reciprocal obligations.

6.2.8 Nova Southeastern University and each separate contractor shall have the same responsibilities for cutting and patching as are described for Contractor at Paragraph 3.14.

6.3 NOVA SOUTHEASTERN UNIVERSITY'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among Contractor, separate contractors and University as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described at Paragraph 3.15, Nova Southeastern University may clean up and allocate the cost among those responsible as A/E determines it to be just.

ARTICLE 7 - CHANGES IN THE WORK

7.1 CHANGE ORDERS

7.1.1 A Change Order is a written order to Contractor executed by the Nova Southeastern University, issued after Award of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time.

The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order signed by Contractor indicates its agreement therewith, including the adjustment in the Contract Sum and/or the Contract Time. All costs, direct or indirect, allowable under the Contract are to be included in the Change Order. No change in Contract Sum shall be requested or considered due to changes in the cost of labor or material encountered between the time of the bid and the time of procurement of the labor or material.

7.1.2 Nova Southeastern University, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by Change Order and shall be performed under the applicable conditions of the Construction Documents. No changes shall be made unless ordered in writing by the University. Except as provided in Subparagraph 7.1.9, no claim for additions to the Contract Sum will be valid unless approved by written Change Order issued by Nova Southeastern University and accepted by Contractor.

7.1.3 Contractor and/or A/E may request changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions. The change shall be identified, described and estimated and sufficient data provided to Board for it to evaluate the change.
7.1.4 Nova Southeastern University shall determine the method to be used to determine the adjustment in the Contract Sum such as:

1. Acceptance by the University of a lump sum price documented by an estimate which includes but is not limited to (a) direct itemized list and cost of labor to which the actual cost of payroll benefits may be added, (b) direct itemized list and cost of material and equipment to which applicable sales tax may be added and, (c) allowance to Contractor for combined overhead and profit of fifteen (15%) percent up to and including $10,000 and ten (10%) percent over$10,000 to be added to the total of (a) and (b);

2. By unit prices when available and accepted by the University; or

3. By cost on a time and material basis plus a fixed percentage for overhead and profit using the following method:

    a) Direct itemized list and actual cost of labor to which the actual cost of payroll benefits may be added.

    b) Direct itemized list and actual cost of material and equipment to which may be added the applicable sales tax.

    c) Allowance to Contractor for combined overhead and profit of fifteen (15%) percent up to and including $10,000 and ten (10%) percent over $10,000 to be added to the total of items (a) and (b). All Subcontracts shall include this allowance provision.

    d) Overhead includes small tools and consumable equipment.

7.1.5 When unit prices have been bid and accepted by the University, they apply to both new and reconstructive work.

7.1.6 Rental rates for contractor owned equipment should not exceed75% of the published rate in the latest edition of

the Associated Equipment Distributors' "Rental Rates and Specifications" or in an equivalent publication.

7.1.7 If none of the methods set forth in Clauses 7.1.4.1, 7.1.4.2 or7.1.4.3 is agreed upon, Contractor, upon receipt of a written Work Authorization Order from the University, shall promptly proceed with the Work involved on a time and material basis. Contractor shall submit to University's authorized representative each day a daily work report in duplicate for approval. The daily work report will show the name and number of each worker, including foreman, if any, employed on such extra work, excluding, however, all other supervisory employees whose compensation shall not be considered an element of cost for any purpose hereunder, the actual number of hours employed on such work, the character of the work that he/she is doing and wages paid to him/her or to be paid to him/her. The daily work report shall show the materials furnished, the amount paid or to be paid there for, and an allowance for combined overhead and profit of fifteen (15%) percent up to and including $10,000 and ten (10%) percent over $10,000. All Subcontracts shall include this allowance provision. In addition to rendering daily work reports for the approval of the University's authorized representative, Contractor shall, when any item of work to be paid for on a time and material basis under a Work Authorization Order has been completed, render an itemized statement to Nova Southeastern University showing the total amount expended for each class of labor and each kind of material on account of each item of such work.

7.1.8 The premium time portion of authorized overtime work shall be reimbursable in accordance with agreed upon wages only but shall not include any allowance for overhead and profit. Contractor may not seek reimbursement for premium time unless such premium time has been ordered, in writing, by the University.

7.1.9 For deletions in the Work, reductions shall be made in the Contract Sum based upon the actual amount of savings in the cost computed upon the same basis as for additional work but without the application of the percentage set forth in Subparagraph 7.1.4.

7.1.10 In order to minimize the impact of delay in receiving and processing changes and obtaining approval, Nova Southeastern University has authorized representatives to approve changes of up to but not exceeding $50, 000, and 00. An approval hereunder by an authorized representative is a binding commitment by Nova Southeastern University to execute a Change Order authorizing and approving the changes. The authorized representatives and established amounts are as follows:

1. Construction Coordinators - not to exceed $10,000.00
2. Construction Supervisors - not to exceed $20,000.00
3. Construction Directors - not to exceed $25,000.00
4. Director of Construction - not to exceed $50,000.00

7.1.11 Should the Contractor believe any change in the work entitles the Contractor to additional money and/or time and an extension of the contract completion date, the Contractor shall, with regard to any such claim, comply with Paragraph 4.3.3., time limits for claims. The Contractor shall not make any additions or changes to the Change Order input form which purport to waive or modify the time permitted to make a claim as provided for by 4.3.3; nor shall the University accept such addition or change. Any claim by the Contractor for additional time or money not made within seven (7) days (4.3.3); shall forever bewailed by the Contractor.

7.2 CONCEALED CONDITIONS

7.2.1 Should concealed conditions encountered in the performance of the Work below the surface of the ground or

should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Construction Documents, or should unknown physical conditions below the surface of the ground or should concealed or unknown conditions in an existing structure of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract, be encountered, the Contract Sum shall be equitably adjusted by Change Order upon claim by either party made within twenty (20) days after the first observance of the conditions.

7.3 FIELD ORDERS

7.3.1 A/E has the authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Construction Documents. Such changes shall be effected by written order signed by the A/E and Contractor and shall be binding on Contractor. Contractor shall carry out such written field order promptly.

ARTICLE 8 – TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allocated in the Construction Documents for Final Completion of the Work.

8.1.2 The contract commencement date shall be the date of award by Nova Southeastern University. The Contractor shall have twenty (20) days from award by the University to obtain and submit proof of bond and insurance as required by Article 11. Failure to submit acceptable bond and insurance information in accordance with Article 11 within the twenty (20) days shall be a material breach of contract and shall be cause for the University in its sole discretion to rescind the contract and place any and all bid security into the funds of Nova Souheastern University, Fort Lauderdale Florida as liquidated damages for such failure and take such other action at contract and at law as the University may deem appropriate. Upon submittal of appropriate documentation as required by Article 11, within the twenty (20) days required herein, the Unversity shall timely issue the Contractor notification of the acceptance of such documents and the Contractor may precede with the work. The date of commencement shall not be postponed nor the contract extended by reason of failure of the Contractor or of persons or of entities for which the Contractor is responsible to act.

8.1.3 The date of Substantial Completion is the date certified by A/E in accordance with Paragraph 9.8.

8.1.4 The term "day" as used in the Construction Documents shall mean a calendar day unless otherwise specifically defined.

8.1.5 All time limits stated in the Contract Documents are of the essence of the Contract. The time for completion set forth in the Contract is a binding part of the Contract upon which the University may rely in planning the use of the facilities to be constructed and for all other purposes.

8.2 PROGRESS AND COMPLETION

8.2.1Time limits stated in the Construction Documents are of the essence of the Contract. By executing the Contract,

Contractor confirms that the Contract Time is a reasonable period for performing the Work. Should Contractor fail to complete the Work or obtain Substantial Completion within the time specified at Article 2 of the Lump Sum Contract, and provided Contractor has not previously obtained a Change Order pursuant to Article7 for an increase in the Contract Time, a sum appropriate with the following schedule shall be deducted for each day of delay in attaining Substantial or Final Completion.

8.1.2 The schedule is agreed upon by and between the Nova Southeastern University and the Contractor because of the difficulty of fixing the University's actual damages in such event. The University and Contractor specifically agree that this is a reasonable estimate of the University's damage.

1. Schedule for liquidated damages:

Contract Price	Liquidated Damages
Up to $100,000	$ 50.00 + 0.1% of Contract Price
$100,000 to $500,000	$150.00 + 0.07% of all over $100,000
$500,000 to $1,000,000	$430.00 + 0.05% of all over $500,000
$1,000,000 to $2,000,000	$680.00 + 0.03% of all over $1,000,000
$2,000,000 and over	$980.00 + 0.01% of all over $2,000,000

2. A Contractor acknowledges that it is not necessary for the University to prove monetary loss in order to assess liquidated damages.

3. Nothing in this Subparagraph shall be construed as limiting the right of University to terminate the Contract as provided for at Article 14.

8.2.2 Should Contractor fail to meet the Project Schedule or its revisions or updates at any time during the course of construction, the A/E may order acceleration of the Work as required at no increase to the Contract Sum.

8.2.3 Contractor shall not, except by agreement or instructions of University in writing, prematurely commence operations on the Site or elsewhere prior to (a) submission of the Contract Bond as provided in Article 11, (b) issuance of the Notice to Proceed and, (c) the effective date of insurance required by Article 11to be furnished by Contractor. The date of the commencement of the Work shall not be changed by the effective date of such insurance.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If Contractor is delayed at any time in progress of the Work for the causes or reasons listed as follows, provided that the cause or reason is beyond Contractor's control and that Contractor is not a party to such cause or reason, the Contract Time shall be extended by Change Order as provided for at Article 7:

1. Acts or neglect of Nova Southeastern University or its representatives.

2. Separate contractor(s) employed by the University, including labor strikes against said contractor(s) if said strike delays Contractor. Refusal to cross picket lines is not a cause for delay subject to an extension of time.

3. Changes ordered in the Work.

4. Acts or regulations of government agencies occurring after award of the Contract.

5. Labor strikes against Contractor or any of its subcontractors.

6. Fires, hurricane, cyclone, tornado, earthquake, epidemics or similar catastrophes.

7. Rain if the Project is without a roof and completely shutdown, or with a roof and the entire Project is delayed by exterior work but only if the stoppage of the Work exceeds twenty (20) days since Contractor shall include in its construction schedule a specific allowance of twenty (20) days as a result of rain.

8. Subsurface conditions varying materially from subsurface information furnished prior to bidding.

9. War, insurrection, riot or civil commotion.

8.3.3 Claims relating to time shall be made in accordance with the applicable provisions of Paragraph 4.3. The Claim shall precisely and exactly state which portion(s) of the Work was delayed, the number of days that the Project was delayed, the cause(s) and reason(s) for the delay and shall include exhibits as evidence and proof of the cause(s) and reason(s), and the Claim shall further show how the delay directly affected the completion of the Work. Contractor shall, regardless of the cause or reason of delay, continue to prosecute all of the Work not directly affected by said cause or reason and, with respect to such portion(s) of the Work affected, will take all reasonable measures to minimize the effect of said cause of delay.

8.3.4 Only that portion of the delay actually affecting the completion of the Work will be considered as a legitimate time extension.

8.3.4 Extensions of time shall be the Contractor's sole remedy foray and all delays. No payment or compensation of any kind shall be made to the Contractor for damages because of hindrance in the orderly progress of the Work or delay from any cause in the progress of the Work, whether such hindrances or delays be avoidable or unavoidable, reasonable or unreasonable, anticipated or unanticipated. Contractor expressly agrees not to make, and hereby waives any claim for damages on account of any delay, obstruction, or hindrance for any cause whatsoever, including but not limited to the aforesaid causes and agrees that Contractor's sole right and remedy in the case of any delay shall be an extension of the time fixed for completion of the Construction Contract. Without limitation, Nova Southeastern University's exercise of its rights under the changes clauses, regardless of the extent or number of such changes, shall not under any circumstances be construed as compensable delays, it being acknowledged that the Construction Contract amount includes and anticipates any and all delays whatsoever from any cause, whether such delays be avoidable or unavoidable, reasonable or unreasonable, anticipated or unanticipated.

8.3.5 In the event it shall be determined by a Court of complete jurisdiction that the preceding provision is inapplicable or unenforceable for any reason or cause, then the Contractor shall be entitled to the sum of $200 per day for each day it is actually delayed by the action of or neglect of the University or A/E or by changes in the Work, or by any other cause of delay which is attributable to the University or A/E and beyond the Contractor's control, avoidance or mitigation and without the fault or negligence of the Contractor and/or Subcontractor or supplier at any tier. This provision contemplates anticipated and actual loss caused by any delay and the difficulty in proving the loss.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.1 THE CONTRACT SUM

9.1.1 The Contract Sum is stated in the Lump Sum Contract and, including authorized adjustments, is the total amount payable by Nova Southeastern University to Contractor for performance of the Work under the Construction Documents.

9.2 SCHEDULE OF VALUES

9.2.1 At least thirty (30) days prior to the first Requisition for Payment, Contractor shall submit to A/E the final detailed Schedule of Values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as A/E may require. This Schedule, unless objected to by A/E, shall be used as a basis for reviewing Contractor's Requisitions for Payment.

9.3. REQUISITIONS FOR PAYMENT

9.3.1 Contractor shall submit to A/E it's notarized Requisition for Payment. The Requisition for Payment shall be completed in accordance with the Schedule of Values and five (5) copies shall be submitted along with a), the updated Project Schedule, and b), Partial Releases. Contractor shall, in addition, provide A/E with Affidavits from Contractor, Subcontractors and material suppliers showing that all have been paid in full excluding retainage for the prior months' Requisition for Payment. Payment will be made in accordance with Florida Statute 218.72. For the purposes of this contract Contractor's payment request shall be considered received by Nova Southeastern University on the first Wednesday after it is marked into the office of the approving agent. In the event the Contractor's Requisition for Payment is rejected, the Contractor shall re-submit the rejected Requisition for Payment with the required corrections within ten (10) days of that rejection and shall clearly mark the re-submitted Requisition for Payment as a "Re-submittal of a previously rejected Requisition for Payment".

9.3.1.1 The Requisition for Payment may include requests for payment on account of adjustment in the Contract Sum only when the Change Order has been approved by the Nova Southeastern University.

9.3.1.2 The Requisition for Payment may not include requests for payments of amounts Contractor does not intend to pay to subcontractor or material supplier because of a dispute or other reason.

9.3.1.3 The Requisition for Payment shall provide that ten (10%) percent of each Requisition for Payment shall be retained by Nova Southeastern University until a release of reatinage request is properly submitted and accepted, except that additional retainage may be withheld for failure to update or make accurate the construction documents or project schedule or for other good cause including but not limited to failure to complete the punch list.

9.3.2 Unless otherwise provided in the Construction Documents, Requisitions for Payment may include materials and equipment delivered and suitably stored at the Site for subsequent incorporation in the Work. If approved in advance by the Nova Southeastern University, payment may be similarly made for materials and equipment stored off-Site if stored in a bonded warehouse and agreed to by University in writing establishing University's title to such materials and equipment or otherwise protecting University's interest, and shall include applicable insurance, storage and transportation to the site for such materials and equipment stored off-Site.

9.3.3 Contractor warrants that title to all Work covered by requisition for Payment shall pass to University no later than the time of payment. Contractor further warrants that upon submittal of a Requisition for Payment, all Work for which Certificates for Payment have been previously issued and payments received from University shall, to the best of Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of Contractor, Subcontractors, material suppliers, or other persons or entities capable of making a claim by reason of having provided labor, materials and/or equipment relating tithe Work.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The A/E will, within seven (7) calendar days after receipt of the Contractor's Requisition for Payment as defined herein, either issue to Nova Southeastern University a Certificate for Payment, with a copy to Contractor, for such amount as A/E determines is properly due, or notify Contractor and Board, in writing, of A/E's reasons for withholding Certificate for Payment in whole or in part as provided in Subparagraph 9.5.1. The approval or disapproval shall be in the office of the Nova Southeastern University Project Manager not later than Wednesday following receipt of the Contractor's Requisition for Payment as defined in 9.3.1 above. In the event that the A/E is not available or unreasonably refuses to sign the Contractor's Requisition for Payment, the Director of Facilities Design and Construction or designee may sign such requisition in place of the A/E and issue to the University a Certificate for Payment which shall be processed by the University as though issued by the A/E.

9.4.2 The issuance of a Certificate for Payment will constitute a representation to Univeristy, based on A/E's observations at the Site and on the data comprising the Contractor`s Requisitions for Payment, that the Work has progressed to the point indicated and that, to the best of A/E's knowledge, information and belief based on A/E's professional judgment, that the quality of the construction is in accordance with the Construction Documents. The issuance of a Certificate for Payment will further constitute a representation that in the A/E's opinion Contractor is entitled to payment in the amount specified.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 A/E may decide not to certify payment and may withhold a Requisition for Payment in whole or in part, to the extent reasonably necessary to protect Nova Southeastern University, if in A/E's opinion the representations to the Nova Southeastern required by Subparagraph 9.4.2 cannot be made. If A/E is unable to certify payment in the amount of the Requisition for Payment, A/E will notify Contractor and the University as provided in Subparagraphs 9.3.1 and 9.4.1 by issuing written disapproval of the Requisition for payment. It shall then become the Contractor's responsibility to correct the disapproved Requisition for Payment and re-submit same as defined in 9.3.1. The A/E may withhold part of the Requisition for Payment and if so shall promptly and within the time frames identified above, issue a Certificate for Payment for the amount which the A/E is able to make such representations to Nova Southeastern University. A/E may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in

A/E's opinion to protect Nova Southeastern University from loss resulting from but not limited to the following:

1. Defective Works not remedied.

2. Third party claims filed or reasonable evidence indicating probable filing of such claims.

3. Failure of Contractor to make payments properly to Subcontractors for labor, materials or equipment.

4. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum.

5. Damage to Nova Southeastern University or another contractor.

6. Reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay.
7. Persistent failure to carry out the Work in accordance with the Construction Documents, the Project Schedule, or the A/E's direction.

8. Failure to maintain and submit as required up-to-date and accurate as-built documents and schedules.

9. Actual or anticipated liquidated damages in excess of retainage as provided for at Clause 8.2.1.1.

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9.6 PROGRESS PAYMENTS

9.6.1 After A/E has issued a Certificate for Payment, Nova Southeastern University shall review and if in agreement make payment in the manner and within the time provided in the Construction Documents and shall so notify A/E.

9.6.2 Contractor shall promptly pay each Subcontractor, upon receipt of payment from Nova Southeastern University, out of the amount paid to Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in similar manner. Nove Southeastern University will pay the General Contractor in Broward County, the General Contractor will pay all subcontractors and suppliers in Broward County and that appropriate flow-down provisions will be used to insure all payments are made in Broward County.

9.6.3 A/E will, on request, furnish to a Subcontractor, a copy of the Contractor’s Schedule of Values. Neither University nor A/E shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.4 Nova Southeatsren University may require consent of surety prior to University making progress payments. Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.5 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by Nova Southeatsren University shall not constitute acceptance of Work not in accordance with the Construction Documents.

9.6.6. A Certificate of payment, a progress payment,or partial or entire use of occupancy of the project by Nova Southeatsren University not constitute acceptance of work not in accordance with the construction documents.

9.7 TIMELY PAYMENT

9.7.1 With regard to each Requisition for Payment from the Contractor which receives Certification for Payment from the A/E or appropriate agent of the Nova Southeastern University, Nova Southeastern University has established that it will consider such Requisition for Payment received on the first Wednesday after it is marked into the office of the approving agent.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion means that the Work can be used by Nova Southeastern University for the intended purpose and that all safety-to-life features of the work are completed, all work and systems are in place and that no defects or hazards exist in the work which could cause injury, that all substantial completion documents including but not limited to maintenance manuals, Fire Sprinkler, and Fire Alarm certifications etc. have been provided and accepted as required that all inspections required of the permitting authority has been successfully completed and that only minor elements of the work remain to be done for final completion.

9.8.2 When the Contractor considers that the work is substantially complete, the Contractor shall conduct an inspection of the work and shall prepare a written punch list of all incomplete, unsatisfactory, or otherwise unacceptable items. The Contractor shall verify the completion/correction of all the items on the Contractor's punch list as a condition for requesting a Substantial Completion Inspection by the A/E as below. The Contractor shall also call for inspections by the permitting authority and shall have all elements of the work requiring inspection by that body fully inspected and approved and shall provide copies of the Contractor's completed punch list signed by the Building Official to the Architect with the substantial completion documents including but not limited those listed in 9.8.1 as a condition for requesting a substantial completion inspection by the A/E as defined by 9.8.3 below.

9.8.3 When Contractor considers that the Work is substantially complete, and has completed the conditions of 9.8.1 and 9.8.2 above, the Contractor shall, in writing, request a Substantial Completion Inspection by the A/E. Such written request shall include all required by 9.8.1 and 9.8.2 above. Upon receipt of the request for Substantial Completion Inspection, the A/E shall confirm all conditions required by 9.8.1 and 9.8.2 above have been met and shall then and only then schedule with Nova Southeastern University and the Contractor the Owner's Substantial Completion Inspection. This inspection shall include at a minimum the A/E and A/E, all engineers and other consultants, Nova Southeastern University, the Contractor, the subcontractors and sub subcontractors. While each element of the work and/or trade grouping of the work does not need to be inspected at the same time, the A/E shall be responsible for insuring that the requisite parties attend each element of the Owner's Substantial Completion Inspection and shall maintain the consolidated list of deficiencies and comments. At the conclusion of the Inspection the Work will be determined to be as follows:

1. Finally Complete: If Nova Southeastern University determines that the Work has achieved Final Completion, final payment shall be made in accordance with Paragraph 9.10.5.

2. Substantially Complete: If Nova Southeastern University determines that the Work has achieved Substantial Completion, this is the date for contract purposes that liquidated damages end and A/E will prepare a Substantial Completion Punch List which will incorporate all punch lists prepared by participants in the walk-through(s). The Substantial Completion Punch List will be provided to Contractor within fifteen days of the Inspection. Contractor shall complete the Substantial Completion Punch List within thirty (30) days of its receipt and provide written notice to A/E that the Work is ready for final inspection and acceptance.

. 3. If the Substantial Completion Punch List is not completed and the project accepted within thirty (30) days of its receipt from A/E, the Surety shall be notified and the Contractor shall meet with representatives(s) of Nova Southeastern University and A/E to show good cause for failure to complete the punch list as required and to present the Contractor's schedule for punch list completion. Nova Southeastern University, at its sole option, may accept the Contractor's presentation and allow the Contractor to continue so long as it maintains the punch list completion schedule or Nova Southeastern University may now or at any time the Contractor fails to maintain the punch list completion schedule require the Contractor vacate the jobsite and all remaining work shall be accomplished by the Board, by its own forces or others, at contractors expense. Contractor acknowledges and agrees that the cost of such completion will be at a premium and in excess of costs Contractor would have incurred to have the work completed as part of the project under the contract and no claim shall accrue to the Contractor therefore. Contractor also acknowledges and agrees that failure to complete the punch list as prescribed herein shall be good and sufficient reason for Nova Southeastern University at its sole discretion, to declare Contractor non-responsible for a period not to exceed three years and thereby not award Contractor any work during said period even if contractor shall be a low bidder. Contractor further waives any claim to due process or other hearing or proceeding and agrees the failure to complete the punch list as prescribed herein is sufficient in and of itself to sustain such action by Nova Southeastern University.

4. Not Substantially Complete: If Nova Southeastern University determines that the Work has not achieved Substantial Completion, the A/E will notify Contractor in writing of the deficiencies within ten (10) days of the Inspection.

9.8.4 Upon Substantial Completion of the Work and upon application by Contractor and certification by A/E, Nova Southeastern University may at its option, without prejudice to other remedies it may have, reduce the retainage withheld to an amount equivalent to three (3) times the value of the Work to be determined to be defective and/or incomplete.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 Nova Southeastern University may occupy and/or use any completed portion of the Work prior to Final Completion and/or final payment. Such occupancy or use is not a waiver by Nova Southeastern University of its right to demand strict compliance with the terms and provisions of Subparagraph 3.5.1 and Article 2 of the Lump Sum Contract and does not constitute acceptance of work not complying with the requirements of the Construction

Documents.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 Final completion occurs when Nova Southeastern University determines there are no incomplete or deficient items of the work, and that the contract documents have been fully complied with by the Contractor. Upon receipt of written notice that the Work is ready for final inspection and Acceptance or at the completion of the thirty (30) day punch list period, whichever is earliest, and upon receipt of a final Requisition for Payment, A/E, its engineers and other consultants, University and Contractor shall participate in a walk-through to inspect the Work. At the conclusion of the inspection, the Work shall be determinedly the Board to be as follows:

1. Finally Complete. If it is determined that the Work has achieved Final Completion, final payment shall be made in accordance with Subparagraph 9.10.4.

2. Not Finally Complete. If it is determined that the Work has not achieved Final Completion, A/E shall prepare final Completion Punch List and Final Completion shall be achieved by Nova Southeastern University in accordance with subparagraph 9.8.2.3.

9.10.2 If after the preparation of an initial Final Inspection Punch List additional legitimate punch list items are identified, Nova Southeasterm University may, at its option, address the additional punch list items as items under guarantee pursuant to Subparagraph 12.2.2.

9.10.3 After all Final Inspection Punch List items have been completed, A/E will recommend to Nova Southeastern University Acceptance of the Project and make recommendations regarding Contractor's final pay request. Acceptance occurs on the date that University determines the Project is complete including the proper and complete submittal of all warranties, manuals, and other close-out documents, and no work remains to be performed.

9.10.4 After the work is determined to be finally complete, the Contractor may apply for Final Payment by submitting its final Requisition for Payment which shall be accompanied by (1)Contractor's Affidavit that payroll, bills for materials and equipment and other indebtedness connected with the Work have been paid or otherwise satisfied, (2) consent of surety to final payment, (3) a certificate evidencing that all insurance required by the Construction Documents is to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) days prior written notice has been given to Nova Southeastern University, (4) a written statement that Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Construction Documents, (5) other data required by the University establishing payment or satisfaction of obligations such as receipts, releases and waivers of liens, claims, security interest or other encumbrances arising out of the Contract, to the extent and in such form as may be designated by University, and (6) a completed set of as-built plans approved by the A/E.

9.10.5 Final Payment to Contractor is payment in full including retainage. Final Payment may not be issued prior to Acceptance as described at Subparagraph 9.10.4.

9.10.6 Acceptance of Final Payment by Contractor, a Subcontractor, Sub-subcontractor or material supplier shall constitute a waiver of Claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Requisition of Payment. Such waivers shall be in addition to the waiver described at Subparagraph 4.3.5.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintainingand supervising all safety precautions and programs inconnection with the performance of the Contract.

10.1.2 In the event Contractor encounters on the site material reasonably believed to be asbestos, lead, or polychlorinatedbiphenyl (PCB), which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to Nova Southeastern University and A/E with follow-up inwriting. The Work in the affected area shall not thereafter be resumed except by written agreement of Nova Southeastern University and Contractor in fact the material is asbestos or PCB and has not been rendered harmless. The Work in the affected area shall beresumed in the absence of asbestos or PCB, or when it has beenrendered harmless, by written instructions from Board or inaccordance with final determination by A/E or by resolution pursuant to Paragraph 4.4.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to (1) employees on the Work and other persons who maybe affected thereby, (2) the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors, (3) other property at the Site or adjacent thereto, such as trees,shrubs, lawns, walks, pavements, roadways, structures andutilities not designated for removal, relocation or replacement in the course of construction, (4) Students, staff and other Nova Southeastern University personnel as well as anyone who could reasonably be effected and all related property. The use of animals is strictly prohibited by any contractor, subcontractor, etc., for the use of security purposes at any Nova Southeastern University construction project site, be it an occupied or unoccupied facility unless so waived by the University.

10.2.2 Contractor warrants that they are aware and knowledgeable of and shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 Contractor shall erect and maintain, as required by existingconditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sitesand utilities.

10.2.4 When use or storage of explosives or other hazardous materialsor equipment or unusual methods are necessary for execution ofthe Work, Contractor shall exercise utmost care and carry onsuch activities under supervision of properly qualified personnel.

10.2.5 Contractor shall promptly remedy all damage and loss (other than damage or loss insured under property insurance required by the Construction Documents) to property referred to in Clauses 10.2.1.(2) and 10.2.1.(3), caused in whole or in part by Contractor, a Subcontractor, a Sub-subcontractor, or anyonedirectly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.(2) and 10.2.1.(3), except damage or loss attributable to acts or omissions of the University or A/E or anyone directly or indirectly employed by either ofthem, or by anyone for whose acts either of them may be liable,and not

attributable to the fault or negligence of Contractor.The foregoing obligations of Contractor are in addition to Contractor's obligations under Paragraph 3.18.

10.2.6 Contractor shall designate a responsible member of Contractor's organization at the Site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated by Contractor in writing to Nova Southeastern University and A/E.

10.2.7 Contractor shall not load or permit any part of theconstruction or Site to be loaded so as to endanger its safety.

10.2.8 Neither A/E nor its employees shall be liable or responsiblefor Contractor's failure to comply with the provisions of Article 10. A/E shall however direct the performance of work necessary to ensure the prevention of damage, injury or loss in the event that Contractor fails to perform pursuant to the provisions of Subparagraph 10.2.

10.2.9 Nova Southeastern University may, at its option, direct Contractor to replace any employee of the Contractor, Subcontractor, Sub-subcontractorand/or materialman who consistently fails or refuses to adhereto Nova Southeastern University safety rules and regulations and/or who is disorderlyand disruptive.

10.3.1 EMERGENCIES

10.3.1 In an emergency affecting safety of the students, faculty staff, or other Nova Southeastern University personnel or property of the University,Contractor shall act, at Nova Southeastern University's discretion or as a last resort in the Contractor's best judgement, to prevent threatened damage, injury or loss to said personnel and/or property. Additional compensation or extension of time claimed by Contractor on account of an emergency may be determined asprovided in Subparagraph 4.3.7 and Article 7.

ARTICLE 11 - INSURANCE AND BONDS

11.1 CONTRACTOR'S INSURANCE

11.1.1 Evidence of Insurance. The Contractor shall not commence Work until the Contractor has procured the insurance required pursuant to this Article and such insurance has been approved by the the Nova Southeastern University. Should the Contractor chose not to purchase the Builder’s Risk insurance required herein until mobilization, any change in the cost of same to the Contractor between the time of the bid and the time of the purchase of the Builder’s Risk insurance shall be the sole responsibility of the Contractor. The Contractor shall provide evidence of such insurance in the following manner.

1. As evidence of compliance with the insurance required by other than Clause 11.1.3.5 - Property Insurance, Contractor shall furnish the Board with a fully completed certificate(s) of insurance signed by an authorized representative of the insurer(s) providing the coverages.

2. As evidence of compliance with the insurance required by Clause 11.1.3.5 - Property Insurance, Contractor shall furnish Nova Southeastern University with either a fully completed Evidence of Property Insurance (ACORD Form 27) signed by an authorized representative of the insurer providing such coverage or an original policy signed by an authorized representative of the insurer providing such coverage.

3. The evidence of insurance described in Clauses 11.1.1.1and 11.1.1.2 shall provide that the the Nova Southeastern University be given no less than thirty (30) days written notice prior to cancellation.

4. Until such time as the insurance is no longer required to be maintained by Contractor, Contractor shall provide the University with renewal or replacement evidence of the insurance in the manner described by Clauses 11.1.1.1 or 11.1.1.2 no less than fifteen (15) days before the expiration or termination of the insurance for which previous evidence of insurance has been provided.

11.1.2 Qualification of Insurers: Insurers providing the insurance required of Contractor by this Contract must meet the following minimum requirements.

1. Such insurers must either:

   a) Authorized by subsisting certificates of authority issued to the companies by the Department of Insurance of the State of Florida or an eligible surplus lines Insurer under Florida Statute.

   or

   b) With respect only to the Workers' Compensation/Employers' Liability coverage, (1) authorized as a group self-Insurer pursuant to Florida Statute 440.87 or (2) authorized as a commercial self-Insurance fund pursuant to Florida Statute.

3. In addition, Insurers, other than Lloyds of London or those authorized by Florida Statute 440.87 or Florida Statute 624.482, shall have and maintain throughout the period for which coverage is required a Best's Rating of "B+" or better and a financial size Category of "IV" or better, according to the latest edition of Best's Key Rating Guide, published by the A.M. Best Company.

4. If, during this period when an Insurer is providing the Insurance required by this Contract, an Insurer shall fail to comply with the foregoing minimum requirements, as soon as the Contractor has knowledge of such failure, the Contractor shall immediately notify Nova Sotheastern University and immediately replace the Insurance provided by the Insurer with an Insurer meeting the requirements.

11.1.3 Description of Required Insurance without limiting any of the other obligations or liabilities of Contractor, Contractor shall, at Contractor's sole expense, procure, maintain and keep in force the amounts and types of insurance conforming to the minimum requirements set forth in this Article. Except as otherwise specified in this Contract, the insurance shall commence prior to the commencement of Work by the Contractor and shall be maintained in force, without interruption, until Final Completion.

1. Commercial General Liability Insurance Except as otherwise provided, the Commercial General Liability Insurance provided by the Contractor shall conform to the requirements hereinafter set forth in this Clause.

a) Contractor's insurance shall cover Contractor for those sources of liability (including, but not by way of limitation, coverage for operations, Products/Completed Operations, independent contractors and liability contractually assumed) which would be covered by the latest occurrence form edition of the standard Commercial General Liability Coverage Form (ISO Form CG 00 01) as filed for use in the State of Florida by

the Insurance Services Office.

b) The minimum limits to be maintained by Contractor (inclusive of any amounts provided by an umbrella or excess policy) shall be those stated in the All Other column in the Required Limits of Insurance &Indemnity form.

c) Except with respect to coverage for Property Damage Liability, the Commercial General Liability coverage shall apply on a first dollar basis without application of any deductible or self-insured retention. The coverage for Property Damage Liability may be subject to a maximum deductible of $1,000 per occurrence. Contractor shall pay on behalf of Nova Southeastern University or the University Board's member, officer or employee any such deductible applicable to a claim against Nova Southeastern University or the University Board's member, officer or employee for which Nova Souheastern University or the University Board's member, officer or employee is insured as an Additional Insured.

2. General Liability Protection for Nova Southeastern University: Except as otherwise provided, the insurance provided by Contractor shall conform to the requirements hereinafter set forth in this Clause.

a) Contractor shall provide the Nova Southeastern University with Owners Protective Liability insurance which shall cover the University for all sources of liability which would be covered by the latest occurrence edition of the standard Owners and Contractors Protective Liability Coverage Form, Coverage for Operations of Designated Contractor (ISO Form CG 00 09) as filed for use in the State of Florida by the Insurance Services Office, without the attachment of restrictive endorsements.

b) Nova Southeastern University shall be the Named Insured and, if applicable, the excess policy or policies. The policy or policies shall be endorsed to include the University Board's members, officers and employees as insured. The policy or policies shall include Contractor, its Subcontractors and its Sub-subcontractors as the contractor designated in the declarations.

c) The minimum limits per occurrence and, if subject to an aggregate, annual aggregate to be provided by Contractor (inclusive of any amounts provided by excess policies) shall be the amounts shown in the All Other column in the Required Limits of Insurance & Indemnity form, as the minimum Each Occurrence and General Aggregate limits respectively required for the Commercial General Liability Coverage.

d) As an alternative to the Policy, the Contractor may include Nova Southeastern University and the University's Board's members, officers and employees as "Additional Insureds" on the Commercial General Liability coverage required pursuant to Clause 11.1.3.1 - Commercial General Liability Insurance. If this alternative is selected, the coverage afforded such Additional Insured shall be no more restrictive than that which would be afforded by adding the Board and the, officers and employees as Additional Insureds using the latest Additional Insured -Owners, Lessees or Contractors (Form B) Endorsement(ISO Form CG 20 10). The Certificate of Insurance shall be clearly marked to reflect "Nova Southeastern University, Ft. Lauderdale, Florida and its members, officers and employees as additional insured" for the use of this alternative.

3. Automobile Liability Insurance Except as otherwise provided, the Automobile Liability Insurance provided by the Contractor shall conform to the following requirements.

a) Contractor's insurance shall cover Contractor for those sources of liability which would be covered bisection II

of the latest occurrence edition of the standard Business Auto Policy (ISO Form CA 00 01) including coverage for liability contractually assumed, as filed for use in the State of Florida by the Insurance Services Office.

b) Coverage shall be included on all owned, non-owned and hired autos used in connection with this Contract.

c) The minimum limits to be maintained by Contractor (inclusive of any amounts provided by an umbrella or excess policy) shall be the amounts stated in the Required Limits of Insurance & Indemnity form.

4. Workers' Compensation/Employers' Liability Insurance Except as otherwise provided, the Workers' Compensation/Employers' Liability Insurance provided by the Contractor shall conform to the following requirements.

a) Contractor's insurance shall cover Contractor (and to the extent its Subcontractors and its Sub-subcontractors are not otherwise insured, its Subcontractors and Sub-subcontractors) for those sources of liability which would be covered by the latest edition of the standard Workers' Compensation Policy, as filed for use in Florida by the National Council on Compensation Insurance, without restrictive endorsements. In addition to coverage for the Florida Workers' Compensation Act, where appropriate, coverage is to be included for the Federal Employers' Liability Act and any other applicable Federal or State law.

b) Subject to the restrictions of coverage found in the standard Workers' Compensation Policy, there shall be no maximum limit on the amount of coverage for liability imposed by the Florida Workers' Compensation Act or any other coverage customarily insured under Part One of the standard Workers' Compensation Policy. The minimum amount of coverage for those coverages customarily insured under Part Two of the standard Workers' Compensation Policy (inclusive of any amounts provided by an umbrella or excess policy) shall be those amounts stated in the Required Limits of Insurance & Indemnity contract.

5. Property Insurance The Property insurance provided by Contractor shall conform to the requirements hereinafter set forth in this Clause.

a) If this Contract includes (1) construction of new above-ground buildings or structures, or (2)additions, improvements, alterations or repairs to existing above-ground buildings or structures or (3)the installation of machinery or equipment into an existing building or structure, the Contractor shall provide, in a policy acceptable to the University, "all risk"(i.e., Special Form) property insurance on any such new buildings or structures, additions, improvements, alterations repairs, machinery or equipment.

b) The amount of the insurance shall be no less than the estimated replacement value at the time of Final Completion of such new buildings or structures, additions, improvements, alterations, repairs, machinery or equipment.

c) The coverage shall not be subject to any restriction with respect to occupancy or use by the University and, subject to thirty (30) day's prior written notice to the University, shall remain in full effect until Final Completion.

d) Nova Southeastern University shall be an insured on this policy.

e) The policy shall contain a waiver of subrogation against the Nova Southeastern University and the University

Board's members, officials, officers and employees.

f) The maximum deductible for perils other than wind and hail shall be $5,000 per occurrence. The maximum deductible for the perils of wind and hail shall be the greater of (1) $50,000 or (2) two percent (2%) of the actual cash value of the covered property. The risk of loss shall remain with the Contractor until Final Completion and Contractor shall pay on behalf of the University or the University Board's officer or employee any deductible(s) applicable. If, after the written request of Contractor, in the opinion of Nova Southeastern University, property insurance with the aforementioned maximum deductibles is not available on commercially reasonable terms, the maximum allowable deductible may be increased, with the express prior written approval of the Office and subject to the conditions of such approval set by the Office, to an amount established by the Office.

g) If this Contract includes construction of or additions to above-ground buildings or structures located within a Special Flood Hazard Area (100 year floodplain), flood insurance must also be provided on such construction or additions for the lesser of:(1) the estimated replacement value at the time of the Board's final acceptance of such addition(s), building(s), or structure(s), or (2) the maximum amount of flood insurance available through the National Flood Insurance Program. The maximum deductible applicable to the flood insurance shall be the greater of (1) $5,000 per occurrence or (2) the minimum deductible for such coverage available through the National Flood Insurance Program.

11.1.4 Contractor's Insurance Primary. The insurance provided by the Contractor pursuant to Paragraph 11.1 shall apply on a primary basis and any other insurance or self-insurance maintained by the University or all University Board's member, officer or employee shall be excess of and not contributing with the insurance provided by or on behalf of Contractor.

11.1.5 Deductible Provisions. Except as otherwise specifically authorized by Subparagraph 11.1.3, the insurance maintained by the Contractor shall apply on a first dollar basis without application of a deductible or self-insured retention.

11.1.6 Insurance Is Additional Remedy. Compliance with the insurance requirements of this Contract shall not limit the liability of Contractor, its Subcontractors, and its Sub-subcontractors, its employees or its agents to the University or others. Any remedy provided to Nova Southeastern University or the University Board's members, officers or employees by the insurance shall be in addition to and not in lieu of any other remedy available under the Contract or otherwise.

11.1.7 Insurance on Subcontractors and Sub-subcontractors. Contractor shall require its Subcontractors and its Sub-subcontractors to maintain any and all insurance required by law. Except to the extent required by law and as may be required by Clause11.1.3.1(c), this Contract does not establish minimum insurance requirements for Subcontractors or Sub-subcontractors.

11.1.8 No Waiver by Approval/Disapproval. Neither approval by University nor failure to disapprove the insurance furnished by Contractor shall relieve Contractor of Contractor's full responsibility to provide the insurance as required by the Contract.

11.1.9 Default of the Contract for Failure to Maintain Insurance. The Contractor shall be in default of this Contract for failure to maintain insurance as required by Article 1. Required Limits of Insurance & Indemnity form. The

Required Limits of Insurance & Indemnity form is determined and provided by Nova Southeastern University.

11.1.11 Asbestos - Special Provisions
If the Contract Documents identify the Contract as an “Asbestos" contract, the minimum requirements for the Commercial General Liability and General Liability Protection for the Board shall be modified as follows:

a) In addition to the scope of coverage otherwise specified in Clause 11.1.3.1 for Commercial General Liability Insurance, the Contractor's insurance shall cover the Contractor for those sources of liability which would be covered by the latest occurrence form edition of the standard Commercial General Liability Coverage Form (ISO Form CG 00 01) and the Hazardous Materials Contractors endorsement (ISO Form CG 22 78) as filed for use in the State of Florida by the Insurance Services Office.

b) In lieu of the limits required by Clause 11.1.3.1, the minimum limits to be maintained by Contractor (inclusive of any amounts provided by an umbrella or excess policy) for Commercial General Liability Insurance shall be those stated in the Asbestos Work column in the Required Limits of Insurance &Indemnity form.

c) In addition to the scope of coverage otherwise specified in Clause 11.1.3.2, the policy shall be endorsed to remove the exclusions applicable to the removal, replacement, repair, enclosure or encapsulation of any hazardous material or substance from a building or structure by or on behalf of the Contractor.

d) In lieu of the limits required by Clause 11.1.3.2, the minimum limits per occurrence and, if subject to an aggregate, annual aggregate to be provided by Contractor (inclusive of any amounts provided by excess policy) shall be those stated in the Asbestos Work column in the Required Limits of Insurance & Indemnity form, as the minimum Each Occurrence and General Aggregate limits respectively required for the Commercial General Liability Coverage.

.2 If the Contract Documents do not identify this Contract as an "Asbestos" contract, and the Contractor encounters asbestos which has not been rendered harmless (by removal or otherwise), and, pursuant to Subparagraph 10.1.2 of the General Conditions of the Contract for Construction, the University, by written agreement with Contractor, contracts with Contractor to render the asbestos harmless, the insurance required by Article 11 shall be amended as follows.

a) Unless Contractor subcontracts the entire Work in connection with the rendering of the asbestos harmless, Contractor shall maintain throughout the duration of such Work, the minimum insurance required by Subparagraph 11.1.3 as modified by Clause 11.1.11.1 in the same manners as if the Contract Documents had identified the Contract as an “Asbestos" contract.

b) If any Work in connection with the rendering of the asbestos harmless is subcontracted by Contractor, each such Subcontractor shall be licensed as an asbestos contractor. In addition, each such Subcontractor shall fully comply with Paragraph 11.1of this Article including as modified by Clause11.1.11.1 in the same manner as if the Subcontractor were the Contractor and the Contract Documents had identified the Contract as an "Asbestos" contract.

c) If Contractor subcontracts the entire Work in connection with the rendering of the asbestos harmless with subcontractors licensed as asbestos contractors, and each such Subcontractor complies with the insurance requirements of the preceding paragraph, Contractor shall maintain throughout the duration of such Work, the minimum insurance required by Subparagraph 11.1.3 without the modifications specified in Clause.

11.3 BONDS

11.3.1 Bonds Required. If the initial Contract price is in excess of $200,000, within 20 days from the date of the award, Contractor shall provide Nova Southeastern University with a Public Construction Payment Bond and Public Construction Performance and Guarantee Bond meeting the standards specified herein, on the forms provided by Nova Southeastern University with a Power of Attorney Affidavit attached, each in an amount not less than the Contract price. The Bond will guarantee all materials and worker ship installed and performed under the contract for the maximum time allowed by law after final acceptance of the Project by Nova Southeastern University.

11.3.2 Sureties' Qualifications: All Bonds required under this Contract, including, but not by way of limitation, and Bid Bond, Public Construction Payment Bond or Public Construction Performance and Guarantee Bond, shall be written through a reputable and responsible surety bond agency licensed to do business in the State of Florida and with a surety which holds a certificate of authority authorizing it to write surety bonds in Florida meeting the following requirements:

A) Ratings by A.M. Best Unless the Contract price is $500,000 or less and the surety qualifies pursuant to Clause C. below, the surety company or corporation shall have the following minimum ratings by The A.M. Best Company:

Contract Amount: Best's Rating

From: $ 200,000.00 A or better, No Minimum Class To: $ 5,000,000.00

From: $ 5,000,000.01 A or better, Class IV To: $10,000,000.00

From: $10,000,000.01 A or better, Class V or more

B) Circular 570

Unless the Contract price is $500,000 or less and the surety qualifies pursuant to Clause C. below, regardless of the size of the bond, in addition to meeting the requirements of Clause A. above, the surety shall also comply with the Circular 570 requirements as set forth in this Clause B. The surety shall maintain a current certificate of authority as an acceptable surety on Federal Bonds in accordance with the U.S. Department of Treasury Circular 570, current revision. If the amount of the bond exceeds the underwriting limitations set forth in the Circular, in order to qualify, the net retention of the surety company shall not exceed the underwriting limitation in the Circular and the excess risk must be protected by co-insurance, reinsurance, or other methods in accordance with Treasury Circular 297, revised September 1, 1978(3) CFR Section 223.10 - Section 223.111. Further the surety company shall provide Nova Southeastern University with evidence satisfactory to the University, that such excess risk has been protected in an acceptable manner.

C) Contract Price of $500,000 or Less

Notwithstanding the foregoing Clauses A. and B., in the event the Contract price does not exceed $500,000, in accordance with Section 287.0935, Florida Statutes, bond with a surety company in compliance with the following requirements shall be acceptable:

i) The surety company is licensed to do business in the State of Florida; and

ii) The surety company holds a certificate of authority authorizing it to write surety bond in Florida; and

iii) The surety company has twice the minimum surplus and capital required by the Florida Insurance Code at the time the invitation to bid is issued; and

iv) The surety company is otherwise in compliance with the provisions of the Florida Insurance Code; and
v) The surety company holds a currently valid certificate of authority issued by the United States Department of the Treasury under 31U.S.C. ss. 9304 to 9308. In order to qualify as an acceptable surety company under this Clause C., an Affidavit for Surety Company shall be executed by an Officer of the surety bond insurer as evidence that a surety company is in compliance with the foregoing requirements.

11.3.3 Additional or Replacement Bond. It is further mutually agreed between the parties hereto that if, at any time, Nova Southeastern University shall deem the surety or sureties upon any bond to be unsatisfactory, or if, for any reason, such bond (because of increases in the work or otherwise) ceases to be adequate, the Contractor shall, at its expense within five (5) days after receipt of notice from the University so to do, furnish an additional or replacement bond or bonds in such form, amount, and with such surety or sureties as shall be satisfactory to the University. There shall be no lapse in surety coverage and failure to do so shall be a material breach of this contract. In such event, no further payments to the Contractor shall be deemed to be due under this Contract until such or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the Board.

11.3.4 Florida Resident Agent: The surety company shall have a Florida resident agent whose name shall be listed in the prescribed space on the forms provided by Nova Southeastern University for all bonds required by the Board.

11.3.5 Alternate Form of Security: In lieu of the Public Construction Performance Bond and Public Payment and Guarantee Bond, Contractor may, pursuant to Section 255.05, Florida Statutes, provide an alternate form of security in the form of cash, a money order, a certified check, a cashier's check, an irrevocable letter of credit, or security of a type listed in Part II of Chapter 625, Florida Statutes. Any such alternative form of security shall be for the same purpose and be subject to the same conditions as those applicable to the bond for which the alternative form of security is being substituted. The determination of the value of an alternative form of security shall be made by the Board.

11.3.6 Other Bonds. If the Work includes connections to infrastructure, including but not limited to water and/or sewer facilities within local and state dedicated right-of-ways, canal crossings and FDOT infrastructure, Contractor, at its expense and in a timely manner, will comply with all Bond requirements set forth by Broward County, State of Florida and other applicable jurisdictional agencies.

11.3.7 Co-Sureties: Subject to the following requirements, the bonds required by this Contract may be provided by more than one surety.

a) Each surety may, by setting forth the limits of its liability in the bond as a definite and specified sum, limit its liability to such amount. If no such limit of liability is indicated, the surety shall be jointly and several liable for the full amount of the bond required.

b) The entire amount of the bond must be provided by one or more sureties who meet the requirements of Subparagraph11.3.2.

c) If one or more of the co-sureties do not meet the requirements of Subparagraph 11.3.2, those co-sureties who do not meet the requirements of Subparagraph 11.3.2 must be jointly and severally liable for the entire amount

of the bond required.

d) If the liability of a co-surety is less than the entire amount of the bond required, the co-surety must, for the purposes only of allowing a joint action or actions against any of its co-sureties, bind itself jointly and severally with such other co-sureties.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to A/E's requestor to requirements specifically expressed in the Construction Documents, it must, if required in writing by A/E, be uncovered for A/E's observation and be replaced at Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which A/E has nonspecifically requested to observe prior to it's being covered, A/E may request to see such Work and it shall be uncovered by Contractor. If such Work is in accordance with the Construction Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to Nova Southeastern University. If such Work is not in accordance with the Construction Documents, Contractor shall pay such costs unless the condition was caused by the University or a separate contractor in which event Board shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK, GUARANTEE AND WARRANTY

12.2.1 Contractor shall promptly correct Work rejected by A/E or failing to conform to the requirements of the Construction Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for A/E's services and expenses made necessary thereby.

12.2.2. Except as otherwise provided in Construction Documents, Contractor shall guarantee the Work for one (1) year and, if within one (1) year after the date of Acceptance of the Work, any of the Work is found to be not in accordance with the requirements of the Construction Documents, Contractor shall correct it promptly after receipt of written notice from the Nova Southeastern University to do so, unless the University has previously given Contractor a written acceptance of such condition. This obligation under this Subparagraph 12.2.2 shall survive final payment. Acceptance of the Work under the Contract and termination of the Contract and Contractor shall not be relieved or responsibility for negligence, defects of manufacture, faulty materials and/or workmanship within the extent and period herein provided and, upon written notice, Contractor shall remedy any defects due thereto and pay all expenses for any damage to other portions of the Work resulting there from.

12.2.3 Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Construction Documents and are neither corrected by Contractor nor accepted by Nova Southeastern University.

12.2.4 If Contractor, after notice, fails to promptly correct nonconforming Work in order to comply with the terms of the guarantee, the University may correct it in accordance with Paragraph 2.4 and Contractor and its surety shall be liable for all expenses incurred. Such action by the University shall not relieve Contractor of further guarantee liability.

12.2.5 The provisions of Paragraph 12.2 apply to nonconforming Work of the Subcontractors as well as to Work performed directly by Contractor.

12.2.6 Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the University or separate contractors caused by Contractor's correction or removal of Work which is not in accordance with the requirements of the Construction Documents.

12.2.7 Contractor specifically warrants and guarantees the integrity of structure provided by the Contractor and/or any elements thereof to be free of water intrusion and/or excessive moisture inside the building as a result of the Contractor's work for a period of five years.

12.2.8 Nothing contained in Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which Contractor might have under the Construction Documents. Establishment of the time period of one (1) year as described in Subparagraph 12.2.2 relates only to the specific obligation of Contractor to correct the deficiencies discovered in the Work in that period, and has no relationship to the time within which the obligation to comply with the Construction Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish Contractor's liability with respect to Contractor's obligations other than specifically to correct the Work.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If Nova Southeastern University prefers to accept Work which is not in accordance with the requirements of the Construction Documents, the University may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the laws of the State of Florida.

13.2 SUCCESSORS AND ASSIGNS

Nova Southeastern Universityand Contractor respectfully bind themselves, their successors and legal representatives to the other party hereto and to successors and legal representatives of the other party in respect to covenants, agreements and obligations contained in the Construction Documents. This Contract may not be assigned nor may any assignment of monies due or to become due to Contractor be assigned. If Contractor attempts to make such an assignment, Contractor shall still remain legally responsible for all obligations under the Contract.

13.3 WRITTEN NOTICE

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

13.4 RIGHTS AND REMEDIES

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

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

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approval of portions of the Work required by the Construction Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Contractor shall permit and facilitate inspection of the Work by the University its agents and public authorities having the legal right of entry on the premises at all times. Contractor shall notify A/E and arrange a schedule for the required inspection or test. Nova Southeastern University shall provide for the inspection or testing when required and shall bear the actual cost of performing the test, unless the tests prove unsatisfactory and then Contractor will bear costs associated with testing.

13.5.2 Work shall not be covered up until Contractor has received notice from A/E that the inspection or test results are satisfactory. If any Work is covered up by Contractor without receipt of notice of satisfactory testing, Contractor shall, if required by A/E, uncover said Work for examination and recover same in a worker like manner at Contractor's expense.

13.5.3 If A/E, Board or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1,A/E, upon written authorization from Nova Southeastern University, may order such additional testing, inspection or approval. University shall bear such costs, except as provided in Subparagraph 13.5.4.

13.5.4 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.3 reveal failure of the portions of the Work to comply with requirements established by the Construction Documents, Contractor shall bear all costs made necessary by such failure including those of repeated procedures, costs involved in preparing for the tests, uncovering and recovering related Work, damage to any existing or new Work, and compensation for A/E's services and expenses.

13.5.5 Contractor shall bear its own administrative costs related to tests and inspections.

13.5.6 Tests and inspections conducted pursuant to the Construction Documents shall be made promptly to avoid unreasonable delay in the Work.

13.5.7 If mill or factory inspection is called for, Contractor shall notify the suppliers that the material shall not be produced or fabricated without due notice to the inspector employed by Nova Southeastern University.

The Contractor shall obtain inspections from the “special inspectors” at least during the following construction phases:

a) Soil compaction or driving piles for foundation, any field soil compaction tests, batter board in place, open footings with reinforcing steel in place.

b) Concrete slabs and forms with reinforcing steel in place, just prior to pouring concrete.

c) Structural steel framing in place, or if a concrete structure, all reinforcing steel in place prior to pouring. The "special inspector" shall also be present during all structural pours.

d) All underground and subsurface piping prior to burial.

e) Installation of ceramic tile work.

f) Installation of HVAC (Heating, Ventilating and Air-conditioning) equipment and duct work, smoke detectors and HVAC controls.

g) Installation of electrical conduit, wiring and equipment.

h) Installation of pipe fittings, valves, piping and plumbing equipment and conducting of all pressure tests.

i) Installation of roof deck and roofing.

j) Final inspection of building finishes.

13.5.9 The "special inspector" may also inspect the work at any other time during construction.

13.5.10 The cost of reinspection for work previously found to be in non-compliance may be deducted from payments due Contractor.

13.6 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.6.1 As between Nova Southeastern University and Contractor:

1. Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

2. Between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to the issuance of the Final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment.

3. After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by Contractor pursuant to any warranty provided pursuant to Paragraph 3.6, the date of any

correction of the Work or failure to correct the Work by Contractor under Paragraph 12.2 or the date of actual commission of any other act or failure to perform any duty or obligation by Contractor or Board, whichever occurs last.

13.7 PROVISION OF SITE AMENITIES

13.7.1 Contractor shall provide a temporary water line sufficient to supply all water needed for the Work and shall pay for all permits and for all charges for water used by Contractors or Subcontractors.

13.7.2 Contractor shall provide sufficient toilet facilities for all workers employed under the Contract.

13.7.3 Contractor shall pay for any electrical installation, servicer power lines used for the Work. If Contractor desires to use the power metered to Nova Southeastern University, permission will be granted provided Contractor connects a power line to the place designated by A/E and pays for the power in accordance with a rate set by University. Contractor shall give University seven (7) days written notice prior to disconnecting.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY CONTRACTOR

14.1.1 Contractor may terminate the Contract if the Work is stoppedfor a period of thirty (30) days through no act or fault of Contractor or a Subcontractor, Sub-subcontractor or theiragents or employees or any other persons performing portions ofthe Work under contract with Contractor for any of thefollowing reasons:

1. Issuance of an order of a court or other public authority having jurisdiction;

2. An act of government, such as a declaration of nationalemergency, making material unavailable;

3. Because Nova Southeastern University has failed to pay Contractor any payment which has been certified by A/E and authorized by the University within forty-five (45) days after the first regular payment date after certification and approval after noticeand subsequent to an additional thirty (30) days afterreceipt of said notice.

4. If one of the above reasons exists, Contractor may, upon seven (7) additional days' written notice to the University and A/E to cure, terminate the Contract and recover from University payment for Work executed and for proven loss with respect to materials, equipment, tools and construction equipment and machinery, including reasonable overhead, profit and damages.

14.2 TERMINATION BY NOVA SOUTHEASTERN UNIVERSITY FOR CAUSE

14.2.1 Board may terminate the Contract if Contractor:

1. Persistently or repeatedly performs non-conforming, defective or deficient work;

2. Persistently or repeatedly refuses or fails to supplyenough properly skilled workers or proper materials;

3. Fails to make payment to Subcontractors for materials orlabor in accordance with the respective agreements betweenContractor and Subcontractor;

4. Persistently disregards laws, ordinances, or rules,regulations or orders of a public authority having jurisdiction;

5. Persistently or repeatedly refuses or fails to correct Work rejected by A/E or failing to conform to the requirements of the Construction Documents;

6. Fails to submit schedules pursuant to the provisions of Subparagraph 3.10;

7. Persistently fails to adhere to the Contract schedule; or

8. Otherwise is guilty of substantial breach of a provisionof the Contract or Construction Documents.

14.2.2 When any of the above reasons exist, Board, upon certificationby A/E that sufficient cause exists to justify such action, or if the position of A/E is vacant at its own initiative may without prejudice to any other rights or remedies of Board andafter giving Contractor and its surety, if any, seven (7) days'written notice, terminate employment of Contractor and may:

1. Take possession of the Site and of all materials,equipment, tools and construction equipment and machinery thereon owned by Contractor;

2. Accept assignment of subcontracts pursuant to Paragraph 5.4;

3. Finish the Work by whatever reasonable method Nova Southeastern University may deem expedient;

4. In lieu of the above Nova Southeastern University may call upon the Surety to perform under the terms and conditions of the PublicPerformance and Guarantee Bond.

14.2.3 When Nova Southeastern University terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs offinishing the Work, including compensation for A/E's services and expenses made necessary thereby, such excess shall be paid to Contractor. If such costs exceed the unpaid balance, Contractor shall pay the difference to Nova Southeastern University. The amount to be paid to Contractor or Nova Southeastern University, as the case may be, shall becertified by A/E, upon application, and this obligation for payment shall survive termination of the Contract.

14.3 SUSPENSION BY NOVA SOUTHEASTERN UNIVERSITY FOR CONVENIENCE

14.3.1 Nova Southeastern University may, without cause, order Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as Board may determine.

14.3.2 An adjustment shall be made in the cost of performance of theContract, including profit on any increased cost ofperformance, caused by suspension, delay or interruption. No adjustment shall be made to the extent:

1. That performance is, was or would have been so suspended,delayed or interrupted by another cause for which Contractor is responsible; or

2. That an equitable adjustment is made or denied under another provision of this Contract.

14.3.3 Adjustments made in the cost of performance may have a mutuallyagreed fixed or percentage fee.

14.4 TERMINATION BY BOARD FOR CONVENIENCE

14.4.1 Nova Southeastern University may, by written notice to the Contractor, terminate this Contract in whole or in part when it is in the interest ofthe University and at the sole discretion of the University.

14.4.2 The Contractor shall be paid for all work executed and reasonable termination expenses and a reasonable allowance for profit and overhead on Work executed, provided that such payments exclusive of termination expenses shall not exceed the total contract price as reduced by other payments made to the Contractor and as further reduced by the value of Work as not completed at the time of termination.

14.4.3 The Contractor is not entitled to profit and overhead on work not performed.

ARTICLE 15 - WATER AND SEWER

15.1.The following language is to be used if this project has onsite water and sewer systems and/or offsite water and sewer systems which require an offsite permit by the Utility having jurisdiction or are constructed with the intent of conveying these water and/or sewer facilities to the Utility having jurisdiction.

15.2 The General Contractor has 90 days from award and/or plan approval whichever is later to secure a Public Works permit for offsite work related to water and sewer and paving and drainage, from the Utility having jurisdiction. The General Contractor must commence work on that portion of the project applicable to the offsite permit immediately after securing a Public Works permit or obtain written permission from the owner to reschedule said work. Nova Southeastern University will not consider any time extension due to the inability of the General Contractor to secure a Public Works permit after plan approval.

15.3 Immediately after the General Contractor has secured said permit and prior to commencing work he shall notify Nova Southeastern University Project Manager and arrange a pre-construction meeting with Nova Southeastern Univeristy (Project Manager, Building Code Compliance Officer and a representative from Offsite Utilities Planning and Development) and the Utilities having jurisdiction and/or governmental agencies having jurisdiction, including but not limited to, Public Works, Miami-Dade Water and Sewer Authority, the Department of Health, Florida Department of Transportation, the Department of Environmental Resource Management and the subcontractor responsible for the work.

At that meeting, the General Contractor shall review the scope of work with, and obtain approval from, the Utilities having jurisdiction and/or governmental agencies having jurisdiction and shall comply with all the requirements, bonds and securities that are imposed by the Utilities having jurisdiction. Once the work has commenced the General Contractor shall coordinate key inspections with the Utilities having jurisdiction, Nova Southeastern University, the

Engineer and the subcontractor responsible for the work. The General Contractor shall submit a signoff and acceptance letter from the inspector of the Utilities having jurisdiction with his requisition for payment, assuring the Board that the portion of the offsite work which he is submitting payment for has been accepted by the Utilities having jurisdiction. The General Contractor shall secure this letter of acceptance from each governmental agency having jurisdiction performing these inspections. At no time will the Board pay the General Contractor for work that has not passed inspection by the Utilities having jurisdiction.

15.4 Once the offsite work has been completed subject to the above permit the General Contractor shall call for a final inspection from the Utilities having jurisdiction. At this time, the General Contractor shall submit to each Utility having jurisdiction and/or Nova Southeastern University the following documentation whichis part of the conveyance package and are the requirements fora final inspection and meter installation by the Utility having jurisdiction.

1. Signed and sealed approved as-builts by a licensed surveyor or engineer of record. As-builts shall comply with the requirements imposed by the Utility having jurisdiction. As-builts submitted to the Broward County Water and Sewer Department (BWASD) shall comply with "Project As-builts" from the Design and Construction Standard Specifications and Details current edition. This Section includes a requirement to show on the as-built drawings, the Florida State Plane Coordinate (current readjustment) of at least two horizontal control points on or parallel to the centerline of a street within the project boundary. Florida State Plane Coordinate (current readjustment) shall also be shown for all manholes and value boxes constructed, modified or installed as part of the project (some exemptions apply, please see Section 01725 of the BWASD Construction Standard Specifications and Details). (Submit four (4) blueprints and one (1) set of Mylar to the Utility having jurisdiction and two (2) blue prints to the Offsite Utilities Planning and Development).

2. Original DOH Letter of Release with attached bacteriological results. (Submit four (4) originals to the Offsite Utilities Planning and Development).

3. Original Final Construction Report Water. (Submit four (4) originals to the Offsite Utilities Planning and Development).

4. Original DERM Release Letter. (Submit four (4) originals to the Offsite Utilities Planning and Development).

5. Operating and Maintenance manuals for pump stations and onsite sewage collection systems either gravity or force main as required by DERM and prepared by licensed engineer. Including an application for an operating permit for a pump station and the operating permit fee. (Submit four (4) originals to the Offsite Utilities Planning and Development).

Two weeks after the day Nova Southeastern University requests the remainder of the conveyance package the General Contractor shall submit the remainder of the original conveyance documents to the University in quadruplicate. These shall include but not be limited to the following:
- Cost breakdown water
- Cost breakdown sewer
- Warranty
- Maintenance Bond
- Waiver and release of lien
- Legal description of easements signed and sealed by a licensed surveyor or engineer of record.

15.5 Nova Southeastern University will not release final payment for offsite or onsite work unless the General Contractor has submitted these conveyance documents.

The General Contractor is responsible for paying each Utility having jurisdiction all construction connection charges and permits associated with the offsite or onsite work.

The General Contractor shall coordinate all offsite water taps for domestic, irrigation and fire line services with the Utility having jurisdiction and shall bear the cost for the installation of these services directly with the Utility having jurisdiction. The General Contractor shall schedule this work with the Utility having jurisdiction in a timely manner. Nova Southeastern Universityshall not be responsible for the General Contractor's inability to schedule the placement of meters in a timely manner.

The General Contractor shall coordinate all offsite sewer connections with the Utility having jurisdiction and shall bear the cost for the installation of these services directly with the Utility having jurisdiction. The General Contractor shall schedule this work with the Utility having jurisdiction in a timely manner. Nova Southeastern Univeristy shall not be responsible for the General Contractor's inability to schedule the sewer connections in a timely manner. The General Contractor shall be responsible for pulling a permit to abandon or remove all septic tanks according to HRS standards. The General Contractor shall schedule and phase the installation of the waste sewage disposal system in a manner that does not interfere with the university's normal operations or disable the campus/ university in any way.

The General Contractor shall secure trenches with chain-link fence and in accordance with the O.S.H.A. Trench Safety Act.

15.6 The Building Official will not grant a certificate of occupancy without the permanent water meters for a the facility installed by the Utility having jurisdiction in place and in full compliance with the Utility having jurisdiction's requirements. Campus Facilities shall not be permitted to open with floating or construction meters. The General Contractor shall bear any and all penalties and fines associated with having an illegal construction or floating meter at the site at the time of occupancy and shall take all the necessary precautions to secure said floating and construction meter from illegal tampering that can lead to the contamination of the domestic water supply. In case the General Contractor cannot schedule the placement of meters before opening he shall request in writing to both the Building Official and the University's Administrative Director of Facilities Design and Construction, a request to be able to provide at his expense a supply of potable water for students and staff until such time that permanent water becomes available as well as pay for all fines and penalties resulting from this action. The General Contractor shall also be responsible for securing the domestic water supply in order to protect students and staff. The granting of this request is at the sole discretion of the Building Official and the University Administrative Director of Facilities Design and Construction.

15.7 If the General Contractor through his own fault has not secured a DERM Release Letter before the facility opening he shall provide and maintain for the University temporary portable restrooms at the General Contractor's sole expense in sufficient time for them to be utilized by school opening. These shall remain until the permanent facilities are in use. The number of restrooms provided shall comply with the Florida Building Code and any and all other applicable codes and shall be located in a manner acceptable to and approved by the University A water meter for a facility shall not be installed until the Utility having jurisdiction and Nova Southeastern University receives a DERM Release Letter.

ARTICLE 16 - WATER AND SEWER (CONSTRUCTION MANAGER @ RISK)

16.1 The following language is to be used if this project has onsite water and sewer systems and/or offsite water and sewer systems which require an offsite permit by the Utility having jurisdiction or are constructed with the intent of conveying these water and/or sewer facilities to the Utility having jurisdiction.

16.2 The Construction Manager @ Risk has 60 days from the Guaranteed Maximum Price (GMP) approval by Nova Southeastern University to secure a Public Works Permit for offsite work related to water and sewer and paving and drainage, from the Utility having jurisdiction. The Construction Manager @ Risk must commence work on that portion of the project applicable to the offsite permit immediately after securing a Public Works permit or obtain written permission from the owner to reschedule said work. Nova Southeastern University will not consider any time extension due to the inability of the Construction Manager @Risk to secure a Public Works permit after plan approval.

16.3 Immediately after the Construction Manager @ Risk has secured said permit and prior to commencing work he shall notify University Project Manager and arrange a pre-construction meeting with Nova Southeastern University (Project Manager, Building Code Compliance Officer and the Utilities having jurisdiction and/or governmental agencies having jurisdiction, including but not limited to, Public works, Broward County Water and Sewer Authority, the Department of Health, Florida Department of Transportation, the Department of Environmental Resource Management and the subcontractor responsible for the work.

At that meeting, the Construction Manager @ Risk shall review the scope of work with, and obtain approval from, the Utilities having jurisdiction and/or governmental agencies having jurisdiction and shall comply with all the requirements, bonds and securities that are imposed by the Utilities having jurisdiction. Once the work has commenced the Construction Manager @ Risk shall coordinate key inspections with the Utilities having jurisdiction, Nova Southeastern University, the Engineer and the subcontractor responsible for the work. The Construction Manager @ Risk shall submit a signoff and acceptance letter from the inspector of the Utilities having jurisdiction with his requisition for payment, assuring the Nova Southeastern University that the portion of the offsite work which he is submitting payment for has been accepted by the Utilities having jurisdiction. The Construction Manager @ Risk shall secure this letter of acceptance from each governmental agency having jurisdiction performing these inspections. At no time will the Nova Southeastern University pay the Construction Manager @ Risk for work that has not passed inspection by the Utilities having jurisdiction.

16.4 Once the offsite work has been completed subject to the above permit the Construction Manager @ Risk shall call for a final inspection from the Utilities having jurisdiction. At this time, the Construction Manager @ Risk shall submit to each Utility having jurisdiction and/or the University the following documentation which is part of the conveyance package and are the requirements for a final inspection and meter installation by the Utility having jurisdiction.

1. Signed and sealed approved as-builts by a licensed surveyor or engineer of record. As-builts shall comply with the requirements imposed by the Utility having jurisdiction. As-builts submitted to the Broward County Water and Sewer Department (BWASD) shall comply with Section01725 "Project As-builts" from the Design and Construction Standard Specifications and Details current edition. This Section includes a requirement to show on the as-built drawings, the Florida State Plane Coordinate (current readjustment) of at least two horizontal control points on or parallel to the centerline of a street within the project boundary. Florida State Plane Coordinate (current readjustment) shall also be shown for all manholes and value boxes constructed, modified or installed as part of the project (some exemptions apply, please see Section01725 of the BCWASD Construction Standard Specifications and Details). (Submit four (4) blueprints and one (1) set of Mylar to the

Utility having jurisdiction and two (2) blue prints to the Offsite Utilities Planning and Development).

2. Original DOH Letter of Release with attached bacteriological results. (Submit four (4) originals to the Offsite Utilities Planning and Development).

3. Original Final Construction Report Water. (Submit four (4) originals to the Offsite Utilities Planning and Development).

4. Original DERM Release Letter. (Submit four (4) originals to the Offsite Utilities Planning and Development).

5. Operating and Maintenance manuals for pump stations and onsite sewage collection systems either gravity or force main as required by DERM and prepared by licensed engineer. Including an application for an operating permit for a pump station and the operating permit fee. (Submit four (4) originals to the Offsite Utilities Planning and Development).

Two weeks after the day Nova Southeastern University requests the remainder of the conveyance package the Construction Manager @ Risk shall submit the remainder of the original conveyance documents to the University in quadruplicate. These shall include but not be limited to the following:

- Cost breakdown water
- Cost breakdown sewer
- Warranty
- Maintenance Bond
- Waiver and release of lien
- Legal description of easements signed and sealed by a licensed surveyor or engineer of record.

16.5 Nova Southeastern University will not release final payment for offsite or onsite work unless the Construction Manager @ Risk has submitted these conveyance documents.

The Construction Manager @ Risk is responsible for paying each Utility having jurisdiction all construction connection charges and permits associated with the offsite or onsite work.

The Construction Manager @ Risk shall coordinate all offsite water taps for domestic, irrigation and fire line services with the Utility having jurisdiction and shall bear the cost for the installation of these services directly with the Utility having jurisdiction. The Construction Manager @ Risk shall schedule this work with the Utility having jurisdiction in a timely manner. The Nova Southeastern University shall not be responsible for the Construction Manager @ Risk's inability to schedule the placement of meters in a timely manner.

The Construction Manager @ Risk shall coordinate all offsite sewer connections with the Utility having jurisdiction and shall bear the cost for the installation of these services directly with the Utility having jurisdiction. The Construction Manager @ Risk shall schedule this work with the Utility having jurisdiction in a timely manner. The Board shall not be responsible for the Construction Manager @ Risk's inability to Schedule the sewer connections in a timely manner.

The Construction Manager @ Risk shall be responsible for pulling a permit to abandon or remove all septic tanks according to HRS standards. The Construction Manager @ Risk shall schedule and phase the installation of the waste

sewage disposal system in a manner that does not interfere with the universities's normal operations or disable the school in any way.

Construction Manager @ Risk Contractor shall secure trenches with chain-link fence and in accordance with the O.S.H.A. Trench Safety Act.

16.6 The Building Official will not grant a certificate of occupancy without the permanent water meters for a university facility installed by the Utility having jurisdiction in place and in full compliance with the Utility having jurisdiction's requirements. University Facilities shall not be permitted to open with floating or construction meters. The Construction Manager@ Risk shall bear any and all penalties and fines associated with having an illegal construction or floating meter at the university site at the time of occupancy and shall take all the necessary precautions to secure said floating and construction meter from illegal tampering that can lead to the contamination of the domestic water supply. In case the Construction Manager @ Risk cannot schedule the placement of meters before university opening shall request in writing to both the Building Official and the University's Administrative Director of Facilities Design and Construction Operations and Legislative Support or Designee, a request to be able to provide at his expense a supply of potable water for students and staff until such time that permanent water becomes available as well as pay for all fines and penalties resulting from this action. The Construction Manager @ Risk shall also be responsible for securing the domestic water supply in order to protect students and staff. The granting of this request is at the sole discretion of the Building Official and the University's Administrative Director of Facilities Design and Construction Operations and Legislative Support or Designee.

16.7 If the Construction Manager @ Risk through his own fault, has not secured a DERM Release Letter before facility opening he shall provide and maintain for the University temporary portable restrooms at the Construction Manager @ Risk's sole expense insufficient time for them to be utilized by opening. These shall remain until the permanent facilities are in use. The number of restrooms provided shall comply with the Florida Building Code and any and all other applicable codes and shall be located in a manner acceptable to and approved by Nova Southeastern University. A water meter for a university facility shall not be installed until the Utility having jurisdiction receives a DERM Release Letter.

ARTICLE 17 - FORMS

17.1 This section contains the latest version of the following forms:

Legal Advertisement Covering Opening of Bids
Instructions Covering Opening of Bids
Bid Bond
Certificate & Affidavit for Surety Bond Insurer
Form of Proposal for Furnishing Labor & Materials
Licensure Certification
List of Subcontractors
Lump Sum Contract
Contractor's Requisition for Partial Payment
Sworn Statement
Construction Payment Bond
Construction Performance & Guarantee Bond
Trench Safety Act Compliance Statement

Final Release of Claim
Required Limits of Insurance & Indemnity.

END OF DIVISION 00

DIVISION 03 CONCRETE

03.1 General Requirements

This division identifies design and specification criteria for concrete design in Nova Southeastern University Buildings and site with the purpose of establishing minimum standards, acceptable to Nova Southeastern University (NSU), to be used as the basis of design for the NSU Main Campus, Fort Lauderdale, Florida.

All work provided under this division shall be performed and designed by a Licensed State of Florida Professional Structural Engineer.

The Design Professional shall obtain from the Nova Southeastern University Project Manager the following information:

1. Geotechnical investigation reports

The design of the concrete shall complement other disciplines designs in a sustainable and reliable fashion.

The Nova Southeastern University Campus and NSU Buildings concrete design must be designed to comply with the following objectives:

1. Sustainable Design under the criteria to meet LEED "Silver" standards as a minimum.
2. Solutions with the best value considering a life cycle cost analysis to account for total project cost.

These objectives are in line with the objectives of all Nova Southeastern University (NSU) Criteria Manual of Design and Specifications Standards Divisions and should be coordinated with all disciplines in a holistic way.

During the service life of a typical Nova Southeastern University building, many minor and major alterations and renovations will be necessary. The flexibility to adjust to alterations easily must be designed into the building and underground systems from the outset. The design of the concrete systems shall provide ways to construct future additions or renovations and allow modifications to be made in one area without causing major disruptions in other areas of the building. It is Nova Southeastern University's goal to build facilities equipped with the latest advances in technology. Making this concept a reality requires a comprehensive design for engineering systems that goes beyond the requirements of the

immediate building program. It also requires a higher level of integration between architecture and engineering systems than one would usually expect in an typical building. The design of the concrete systems and other building components shall all be combined together to produce a building that meets the programmed sustainability rating (LEED "silver" rating) of the specific project. In addition, the design work shall be done in accordance with all rules, regulations, and requirements of all authorities having jurisdiction.

03.1.1 Submittals

The Design Professional must ensure that all submittals and shop drawings are properly coordinated with other project disciplines.

03.2 Codes and Standards

03.2.1 Cast-in-Place Concrete, Architectural Concrete, and Unbonded Post-Tensioned Concrete

The Design Professional shall specify that the Cast-in-Place Concrete, Architectural Concrete, and Unbonded Post-Tensioned Concrete comply with the requirements of the applicable authorities having jurisdiction and with the current edition at the time of the project with the following codes and standards:

1. Florida Building Code (FBC)
2. American Society of Testing and Materials (ASTM)
3. American Concrete Institute (ACI)
4. National Ready Mixed Concrete Association (NRMCA)
5. United States Corps of Engineers (CE)
6. Concrete Reinforcing Steel Institute (CRSI)
7. Post-Tensioning Institute (PTI)
8. American Association of State Highway and Transportation Officials (AASHTO)
9. American Architectural Manufacturers Association (AAMA)

03.3 Design Criteria

03.3.1 Cast-in-Place Concrete, Architectural Concrete, and Unbonded Post-Tensioned Concrete

The Design Professional shall specify the Cast-in-Place Concrete, Architectural Concrete, and Unbonded Post-Tensioned Concrete covered under this section.

1. Cast-in-place concrete should include the following:
   a. Design of the subgrade including compaction. Specifying a minimum thickness.
   b. Design of concrete structures coordinated with architecture and other disciplines to enhance the building required uses and at the same time blend with existing Nova Southeastern University atmosphere.
   c. Concrete structures are to include:
      (1) Concrete slabs on grade.
      (2) Structural slabs.

(3) Columns, concrete walls, shear walls, retaining walls and foundations.

d. Attention shall be given to the "Durability Requirements" chapter of ACI 318. Comply with the water/cement ratios indicated in the table entitled "Requirement for Special Exposure Conditions".

2. Architectural concrete should include the following:
   a. Design of the subgrade including compaction and stabilization if required by soil conditions. Specifying a minimum thickness.
   b. Design of exposed concrete structures with finishes coordinated with architecture to enhance the building appeal.
   c. Concrete structures to include:
      (1) Exposed concrete columns, concrete walls and shear walls.
      (2) Exposed concrete retaining walls.

3. Unbonded post-tensioned concrete should include the following:
   a. Design and specification of concrete slabs to achieve the following:
      (1) Thinner concrete slabs.
      (2) Reduction of amount of reinforcing.

03.4 Specific requirements (organized by CSI Master Format® 2013 Numbers & Titles)

03 30 00	Cast-in-Place Concrete
03 33 00	Architectural Concrete
03 38 16	Unbonded Post-Tensioned Concrete

03 30 00 Cast-in-Place Concrete

Design Standards

1. The Design Professional shall design the cast-in-place concrete as follows:

   a. LEED "silver" submittals:
      (1) Product data for Credit MR 4.
      (2) Product data for Credit IEQ 4.3
      (3) Design mixture for Credit ID 1.1

   b. Cast-in-place materials:
      (1) Steel reinforcing as follows:
         (a) Recycled content of steel products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.
         (b) Reinforcing Bars: ASTM A615, Grade 60, deformed.
         (1.) Galvanized reinforcing bars zinc coated after fabrication and bending as per ASTM A767, if required.
         (2.) Epoxy-coated reinforcing bars epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length as per ASTM A775, if required.

(c) Plain-steel welded wire reinforcement, fabricated from as-drawn steel wire into flat sheets as per ASTM A185, if required.
(d) Deformed-Steel Welded Wire Reinforcement, flat sheet as per ASTM A497, if required.
(e) Galvanized-steel welded wire reinforcement fabricated from galvanized-steel wire into flat sheets as per ASTM A185, if required.
(f) Epoxy-coated welded wire reinforcement, Class A coated, Type 1, plain or deformed steel as per ASTM A884, if required.
(g) Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice.

(2) Concrete materials as follows:
(a) Cementitious Material: Use the same cementitious materials, of the same type, brand, and source, throughout the same project:
(b) Portland cement: ASTM C150 gray or white. Supplement if required with the following:
(1.) Fly Ash: ASTM C618, Class F or C.
(2.) Ground granulated blast-furnace slag: ASTM C989, Grade 100 or 120.
(c) Blended hydraulic cement: ASTM C595, Type IS, Portland blast-furnace slag, Type IP, portland-pozzolan, Type I (PM), pozzolan-modified Portland or Type I (SM), slag-modified Portland cement, if required.

(3) Normal-weight aggregates: ASTM C33, graded.
(a) Maximum coarse-aggregate size as required.
(b) Fine Aggregate if required; free of materials with deleterious reactivity to alkali in cement.

(4) Light-weight aggregates as per ASTM C330. Specify nominal maximum aggregate size.

(5) Water as per ASTM C94 or potable.

(6) Admixtures when required:
(a) Air-entraining admixture: ASTM C260.
(b) Specify chemical admixtures:
(1.) Specify that admixtures be certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not accept the use of calcium chloride or of admixtures containing calcium chloride.
(2.) Water-Reducing Admixture: ASTM C494, Type A.
(3.) Retarding Admixture: ASTM C494, Type B.

(4.) Water-Reducing and Retarding Admixture: ASTM C494, Type D.
(5.) High-Range, Water-Reducing Admixture: ASTM C494, Type F.
(6.) High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.
(7.) Plasticizing and Retarding Admixture: ASTM C1017, Type II.

(7) Fiber reinforcement if required:
(a) Synthetic Micro-Fiber: Monofilament or fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C1116 Type III.

(8) Waterstops if required:
(a) Flexible Rubber Waterstops: CE CRD-C 513, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricated corners, intersections, and directional changes.
(b) Chemically Resistant Flexible Waterstops: Thermoplastic elastomeric rubber waterstops with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints; resistant to oils, solvents, and chemicals. Factory fabricated corners, intersections, and directional changes.
(c) Flexible PVC Waterstops: CE CRD-C 572, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricated corners, intersections, and directional changes.
(d) Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete.
(e) Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete.

(9) Vapor retarders if required:
(a) Sheet Vapor Retarder: ASTM E1745, Include manufacturer's recommended adhesive or pressure-sensitive tape.
(b) Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils thick.

(10) Curing materials if required:
(a) Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
(b) Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf.
(c) Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
(d) Water: Potable.

(e) Clear, Waterborne, and Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipates.

(f) Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, non-dissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

(g) Clear, Solvent-Borne, Membrane Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

(1.) VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

(h) Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

(2.) VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

(11) Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

(12) Concrete mixtures:

(a) Prepare design mixtures for each type and strength of concrete, proportioned based on laboratory trial mixture or field test data, or both, according to ACI 301.

(b) Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 40 percent.

(c) Use admixtures according to manufacturer's written instructions:

(1.) Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.

(2.) Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

(3.) Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

(d) Proportion normal-weight concrete mixture as follows:

(1.) Minimum Compressive Strength at 28 days.
(2.) Maximum Water-Cementitious Materials Ratio.
(3.) Slump limit.
(4.) Air content.
(5.) Micro-fibers if required.

(e) Proportion light-weight concrete mixture as follows:

(1.) Minimum Compressive Strength at 28 days.
(2.) Maximum Water-Cementitious Materials Ratio.
(3.) Slump limit.

(4.) Air content.
(5.) Micro-fibers if required.

(f) Proportion structural light-weight concrete mixture as follows:
(1.) Minimum Compressive Strength at 28 days.
(2.) Maximum Water-Cementitious Materials Ratio.
(3.) Slump limit.
(4.) Air content.
(5.) Micro-fibers if required.

(g) That the fabrication of steel reinforcing complies with the CRSI's "Manual of Standard Practice

(h) Concrete mixing:
(a) Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94 and ASTM C 1116 and furnish batch ticket information.
(1.) When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

c. Specify execution of concrete work as follows:
(1) Formwork:
(a) The design of the formwork shall be by the contractor including, erection, shoring, bracing, and maintenance of formwork and as per ACI 301 The formwork is to support vertical, lateral, static, dynamic loads, and construction loads that might be applied, until structure can support such loads.
(b) That formwork is constructed so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

(2) Installation of embedded items:
(a) Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

(3) Sheet installation of vapor retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
(a) Lap joints 6 inches and seal with manufacturers recommended tape.

(4) Installation of steel reinforcing:
(a) Compliance with CRSI's "Manual of Standard Practice" for placing reinforcement.
(b) Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

(5) Joint installation:
- (a) General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- (b) Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by the Design Professional.
- (c) Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
  - (1.) Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate tool marks on concrete surfaces.
  - (2.) Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- (d) Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- (e) Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

(6) Concrete placement:
- (a) Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- (b) Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - (1.) Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- (c) Cold-Weather Placement: Comply with ACI 306.1.
- (d) Hot-Weather Placement: Comply with ACI 301.

(7) Finishing of formed surfaces:
- (a) Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - (1.) Apply to concrete surfaces as indicated on plans.

(b) Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
(1.) Apply to concrete surfaces as indicated on plans.

(c) Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
(1.) Smooth-Rubbed Finish.
(2.) Grout-Cleaned Finish.
(3.) Cork-Floated Finish.

(d) Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

(8) Finishing of floors and slabs:

(a) Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

(b) Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce profile amplitude of 1/4 inch in one direction.
(1.) Apply scratch finish to surfaces as indicated on drawings.

(c) Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
(1.) Apply float finish to surfaces as indicated on drawings.

(d) Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
(1.) Apply a trowel finish to surfaces as indicated on drawings.
(2.) Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft long straightedge resting on two high spots and placed anywhere on the surface does not exceed specified clearance.

(e) Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated. While concrete is still plastic, slightly scarify surface with a fine broom.
(1.) Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

(f) Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

(9) Concrete protecting and curing:
- (a) Specify the protection of freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- (b) Evaporation retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- (c) The curing of concrete according to ACI 308.1, by one or a combination of the following methods:
  - (1.) Moisture Curing.
  - (2.) Moisture-Retaining-Cover Curing.
  - (3.) Curing Compound.
    Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.
  - (4.) Curing and Sealing Compound.

(10) Concrete surface repairs:
- (a) Defective Concrete: Repair and patch defective areas when approved by the Design Professional. Remove and replace concrete that cannot be repaired and patched to the Design Professional's approval.

(11) Field quality control:
- (a) Testing and Inspecting: Specify that Nova Southeastern University will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

(12) Level concrete slab per ACI recommended tolerance compatible with intended floor finish.

03 33 00 Architectural Concrete

Design Standards

1. The Design Professional shall design the architectural concrete as follows:

   a. LEED “silver” submittals:
   - (1) Product data for Credit MR 4.
   - (2) Product data for Credit IEQ 4.3
   - (3) Design mixture for Credit ID 1.1

b. Submittal of formwork shop drawings.

c. Submittal of samples for each of the following materials:
   (1) Form-facing panel.
   (2) Form ties.
   (3) Form liners.
   (4) Coarse- and fine-aggregate gradations.
   (5) Chamfers and rustications.

d. Form-facing materials:
   (1) Form-facing panels for as-cast or exposed-aggregate finishes: Steel, glass-fiber-reinforced plastic or other approved non-absorptive panel materials that will provide continuous, true, and smooth architectural concrete surfaces.

   (2) Form Liners if required: Units of face design, texture, arrangement, and configuration indicated or to match design reference sample. Furnish with manufacturer's recommended liquid-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent surface treatments of concrete.

   (3) Rustication Strips if required: Metal, rigid plastic or dressed wood with sides beveled and back kerfed; non-staining.

   (4) Chamfer Strips if required: Metal, rigid plastic, elastomeric rubber, or dressed wood, 3/4 by 3/4 inch minimum; non-staining.

   (5) Form Joint Tape if required: Compressible foam tape; pressure sensitive; AAMA 800, "Specification 810.1, Expanded Cellular Glazing Tape"; minimum 1/4 inch.

   (6) Form Ties: Factory-fabricated, [glass-fiber-reinforced plastic] [internally disconnecting] [or] [removable] ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

e. Cast-in-place materials:
   (1) Steel reinforcing as follows:
      (a) Refer to Section 03 30 00 Cast-in-Place Concrete.
      (b) Recycled content of steel products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.
      (c) Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place.
         (1.) Where legs of wire bar supports contact forms, use gray, all-plastic, CRSI Class 1, gray, plastic-protected or CRSI Class 2, stainless-steel bar supports.

   (2) Concrete materials as follows:

(a) Cementitious Material: Use the same cementitious materials, of the same type, brand, and source, throughout the same project:
(b) Portland cement: ASTM C150 gray or white. Supplement if required with the following:
(1.) Fly Ash: ASTM C618, Class F or C.
(2.) Ground granulated blast-furnace slag: ASTM C989, Grade 100 or 120.
(c) Blended hydraulic cement: ASTM C595, Type IS, portland blast-furnace slag, Type IP, portland-pozzolan, Type I (PM), pozzolan-modified Portland or Type I (SM), slag-modified portland cement, if required.

(3) Normal-weight aggregates: ASTM C33, graded.
(a) Maximum coarse-aggregate size as required.
(b) Fine Aggregate if required; free of materials with deleterious reactivity to alkali in cement.

(4) Light-weight aggregates as per ASTM C330. Specify nominal maximum aggregate size.

(5) Water as per ASTM C94 or potable.

(6) Admixtures when required:
(a) Air-entraining admixture: ASTM C260.
(b) Chemical admixtures:
(1.) Admixtures to be certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not accept the use of calcium chloride or of admixtures containing calcium chloride.
(2.) Water-Reducing Admixture: ASTM C494, Type A.
(3.) Retarding Admixture: ASTM C494, Type B.
(4.) Water-Reducing and Retarding Admixture: ASTM C494, Type D.
(5.) High-Range, Water-Reducing Admixture: ASTM C494, Type F.
(6.) High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.
(7.) Plasticizing and Retarding Admixture: ASTM C1017, Type II.

(7) Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, non-fading, and resistant to lime and other alkalis.

(8) Curing materials if required:
(a) Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf.

(b) Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
(c) Water: Potable.
(d) Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B.
(1.) For integrally colored concrete, curing compound shall be pigmented type approved by color pigment manufacturer.
(2.) For concrete indicated to be sealed, curing compound shall be compatible with sealer.

(9) Concrete mixtures:
(a) Prepare design mixtures for each type and strength of concrete, proportioned based on laboratory trial mixture or field test data, or both, according to ACI 301.
(b) Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 40 percent.
(d) Proportion concrete mixture as follows:
(1.) Specify Minimum Compressive Strength at 28 days.
(2.) Specify Maximum Water-Cementitious Materials Ratio.
(3.) Specify Slump limit.
(4.) Specify air content.
(5.) Specify micro-fibers if required.

(10) Concrete mixing:
(a) Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94 and ASTM C 1116 and furnish batch ticket information.
(1.) Clean equipment used to mix and deliver cast-in-place architectural concrete to prevent contamination from other concrete.
(2.) When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

c. Execution of concrete work as follows:
(1) Formwork:
(a) Refer to Section 03 30 00 Cast-in-Place Concrete for formwork, embedded items and shoring and re-shoring.
(b) Limit deflection of form-facing panels to not exceed ACI 303.1 requirements.
(c) In addition to ACI 303.1 limits on form-facing panel deflection, limit cast-in-place architectural concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
(1.) Class A, 1/8 inch.

(d) Fabricate forms to result in cast-in-place architectural concrete that complies with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

(e) Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

(f) Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

(g) Place form liners accurately to provide finished surface texture indicated. Provide solid backing and attach securely to prevent deflection and maintain stability of liners during concreting. Prevent form liners from sagging and stretching in hot weather. Seal joints of form liners and form liner accessories to prevent mortar leaks. Coat form liner with form-release agent.

(2) Reinforcement and inserts:

(a) Refer to Section 03 30 00 "Cast-in-Place Concrete" for fabricating and installing steel reinforcement. Securely fasten steel reinforcement and wire ties against shifting during concrete placement.

(b) Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

(3) Removing and re-using of forms:

(a) Formwork for sides of beams, walls, columns, and similar parts of the work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

(1.) Cut off and grind glass-fiber-reinforced plastic form ties flush with surface of concrete.

(b) Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved 28-day design compressive strength. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

(c) When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for cast-in-place architectural concrete surfaces.

(4) Joints:

(a) Install construction joints true to line with faces perpendicular to surface plane of cast-in-place architectural concrete so strength and appearance of concrete are not impaired, at locations indicated or as approved by the Design Professional.

(1.) Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.

(b) Contraction joints: Form weakened-plane contraction joints true to line with faces perpendicular to surface plane of cast-in-place architectural concrete so strength and appearance of concrete are not impaired, at locations indicated or as approved by Design Professional.

(4) Concrete placement:
- (a) Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- (b) Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - (1.) Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- (c) Cold-weather placement: Comply with ACI 306.1.
- (d) Hot-weather placement: Comply with ACI 301.

(5) Finishing of formed surfaces:
- (a) Architectural concrete finish: Match the Design Professional's design reference sample, identified and described as indicated, to satisfaction of the Design Professional.
- (b) Related unformed surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces.
  - (1.) Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.
- (d) Maintain uniformity of special finishes over construction joints unless otherwise indicated.
- (e) Form-liner finish: Produce a textured surface free of pockets, streaks, and honeycombs, and of uniform appearance, color, and texture.
- (f) Scrubbed finish if required: After concrete has achieved a compressive strength of from 1000 to 1500 psi apply scrubbed finish. Wet concrete surfaces thoroughly and scrub with stiff fiber or wire brushes, using water freely, until top mortar surface is removed and aggregate is uniformly exposed. Rinse scrubbed surfaces with clean water. Maintain continuity of finish on each surface or area of Work. Remove only enough concrete mortar from surfaces to match design reference sample or mockup.
- (g) High-pressure water-jet finish if required: Perform high-pressure water jetting on concrete that has achieved a minimum compressive strength of 4500 psi. Coordinate with formwork removal to ensure that surfaces to be high-pressure water-jet finished are treated at same age for uniform results.

(h) Abrasive-blast finish: Perform abrasive blasting after compressive strength of concrete exceeds 2000 psi. Coordinate with formwork removal to ensure that surfaces to be abrasive blasted are treated at same age for uniform results. Use an abrasive grit of proper type and gradation to expose aggregate and surrounding matrix surfaces to match design reference sample or mockup, as follows:
  (1.) Brush: Remove cement matrix to dull surface sheen and expose face of fine aggregate; with no significant reveal.
  (2.) Light: Expose fine aggregate with occasional exposure of coarse aggregate and uniform color; with maximum reveal of 1/16 inch.
  (3.) Medium: Generally expose coarse aggregate; with slight reveal, a maximum of 1/4 inch.
  (4.) Heavy: Expose and reveal coarse aggregate to a maximum projection of one-third its diameter; with reveal range of 1/4 to 1/2 inch.

(i) Bush hammer finish if required: Allow concrete to cure at least 14 days before starting bushhammer surface finish operations.
  (1.) Surface Continuity: Perform bush hammer finishing in as continuous an operation as possible, maintaining continuity of finish on each surface or area of Work. Maintain required patterns or variances of cut as shown on Drawings or to match design reference sample or mockup.
  (2.) Surface Cut: Maintain required depth of cut and general aggregate exposure.

(6) Concrete curing:

(a) Begin curing cast-in-place architectural concrete immediately after removing forms from or applying as-cast formed finishes to concrete. Cure according to ACI 308.1, by one or a combination of the following methods that will not mottle, discolor, or stain concrete:
  (1.) Moisture Curing.
  (2.) Moisture-Retaining-Cover Curing.
  (3.) Curing Compound.

(7) Concrete surface repairs:

(a) Defective Concrete: Repair and patch defective areas when approved by the Design Professional. Remove and replace concrete that cannot be repaired and patched to the Design Professional's approval.

(b) Protect corners, edges, and surfaces of cast-in-place architectural concrete from damage; use guards and barricades.

(c) Protect cast-in-place architectural concrete from staining, laitance, and contamination during remainder of construction period.

(8) Field quality control:

(a) Testing and Inspecting: Specify that Nova Southeastern University will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

03 38 16 Unbonded Post-Tensioned Concrete

Design Standards

1. The Design Professional shall design the unbonded post-tensioned concrete as follows:

   a. LEED "silver" submittals:
      (1) Product data for Credit MR 4.

   b. Shop drawings submittal:
      (1) Shop drawings to be prepared by or under the supervision of a qualified professional engineer, detailing tendon layout and installation procedures.

      (2) If a delegated-design submittal for post-tensioning system is required then, sealed design calculations prepared by a qualified structural engineer indicating method of elongation calculation including values used for friction coefficients, anchorage seating loss, elastic shortening, creep, relaxation, and shrinkage, will be required.

   c. Informational submittals:
      (1) Qualification Data: For installer, manufacturer and testing agency.

      (2) Product certificates.

      (3) Mill Test Reports: For prestressing strand.

      (4) Field quality-control reports.

      (5) Stressing Records: Submit the same day as stressing operations.

   d. Quality assurance procedures:
      (1) Manufacturer qualifications:
         (a) Fabricating plant certified by PTI according to procedures set forth in PTI's "Manual for Certification of Plants Producing Unbonded Single Strand Tendons".

      (2) Installer qualifications:
         (a) A qualified installer whose full-time Project superintendent has successfully completed PTI's Level 1 - Field Fundamentals course or has equivalent verifiable experience and knowledge acceptable to the Design Professional.
         (b) Superintendent must receive training from post-tensioning supplier in the operation of stressing equipment to be used on project.

(3) Nova Southeastern University testing agency shall be qualified according to ASTM E 329 for indicated testing.
(a) Testing Agency Inspector: Personnel performing field inspections and measuring elongations shall have successfully completed PTI's Level 1 - Field Fundamentals course or shall have equivalent verifiable experience and knowledge acceptable to the Design Professional.

(4) Delivery, storage, and handling of post-tensioning materials shall be according to PTI's "Field Procedures Manual for Unbonded Single Strand Tendons."

e. Performance requirements:
(1) If a delegated design is used, the a qualified professional engineer, as defined in Section 014000 "Quality Requirements," needs to be engaged to design post-tensioned reinforcement.
(a) Design cast-in-place, post-tensioned concrete reinforcement as indicated in this Section. Show final effective forces, tendon profiles, and non-prestressed reinforcement on design installation drawings.

(2) Design structure to withstand the loads indicated according to governing codes, within limits and under conditions indicated.

(3) Average pre-compression:
(a) Minimum average slab pre-compression.
(b) Maximum average slab pre-compression.
(c) Minimum average pre-compression in T-, L-, and rectangular-beam cross sections.
(d) Minimum pre-compression in slab section not Included in T- or L-beam section.
(e) Maximum pre-compression in transfer girders. Specify stage-stressing sequence to avoid overstress.

(4) Comply with ACI 318 requirements unless more stringent requirements are specified.

(5) Fire Resistance: Design members such that thickness and concrete cover over reinforcement comply with fire-resistance requirements of authorities having jurisdiction.

(6) Deflection Limits Including creep and shrinkage effects.

(7) The closure strips shall be at mid span and that tendon forces and profiles be adjusted profiles accordingly. Calculate moments in spans with closure strips assuming a continuous slab. Provide only non-prestressed reinforcement within closure strips. Design reinforcement in closure strip to carry ultimate moment at midspan.

f. Prestressing tendons:

(1) Comply with ACI 423.6, "Specification for Unbonded Single Strand Tendons," unless otherwise indicated in the Contract Documents.

(2) Prestressing strand: ASTM A416/, Grade 270, uncoated, seven-wire, low-relaxation, and diameter strand.

(3) Post-tensioning Coating: Compound with friction-reducing, moisture-displacing, and corrosion-inhibiting properties; chemically stable and nonreactive with prestressing steel, non-prestressed reinforcement, sheathing material, and concrete.

(4) Tendon sheathing:
- (a) Minimum Thickness: 0.050 inch for polyethylene or polypropylene with a minimum density of 0.034 lb/cu. in.
- (b) Tendon sheathing shall be continuous over length of tendon to provide watertight encapsulation of strand and between anchorages to prevent intrusion of cement paste or loss of coating for a non-encapsulated system.

(5) Anchorage device and coupler assembly:
- (a) Assembly of strand, wedges, and anchorage device or coupler complying with static and fatigue testing requirements and capable of developing 95 percent of actual breaking strength of strand.

(6) Encapsulation system if required: Watertight encapsulation of prestressing strand consisting of the following:
- (a) Wedge-cavity caps: Attached to anchorages with a positive mechanical connection and completely filled with post-tensioning coating.
- (b) Sleeves: Attached to anchorage device with positive mechanical connection; overlapped a minimum of 4 inches with sheathing and completely filled with post-tensioning coating.

g. Non-prestressed steel bars:

(1) Recycled content of steel products: Post-consumer recycled content plus one-half of pre-consumer recycled content a minimum of 60 percent.

(2) Support bars, reinforcing bars, hairpins:
- (a) Steel: ASTM A 615, Grade 60, deformed.
- (b) Low-Alloy Steel: ASTM A 706, deformed for welding and where required.
- (c) Supporting bars, reinforcing bars and applicable steel shall be hot dipped galvanized specifically on all “wet” locations as water features, fountain, and pools.
- (d) All exposed reinforcing steel that is cut shall be required to be coated in the appropriate coating material in order to prevent corrosion.

(3) Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening tendons and tendon support bars in place.

Manufacture bar supports, according to CRSI's "Manual of Standard Practice," from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:

(a) For uncoated bars, use all plastic, CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.

h. Accessories:

(a) Pocket formers: Capable of completely sealing wedge cavity; sized to provide the required cover over the anchorage and allow access for cutting strand tail.

(b) Anchorage fasteners as required: Stainless, galvanized, uncoated-steel nails, wires, and screws used to attach anchorage devices to formwork.

(c) Sheathing Repair Tape if required: Elastic, self-adhesive, moisture-proof tape with minimum width of 2 inches, in contrasting color to tendon sheathing; nonreactive with sheathing, coating, or prestressing steel.

i. Patching material:

(1) One-component, polymer-modified, premixed patching material containing selected silica aggregates and Portland cement, suitable for vertical and overhead applications. Do not use material containing chlorides or other chemicals known to be deleterious to prestressing steel or material that is reactive with prestressing steel, anchorage device material, or concrete.

j. Tendon installation:

(1) Formwork:

(a) Provide formwork for post-tensioned elements as specified in Section 03 30 00 "Cast-in-Place Concrete." Design formwork to support load redistribution that may occur during stressing operation. Ensure that formwork does not restrain elastic shortening, camber, or deflection resulting from application of prestressing force.

(b) Do not remove forms supporting post-tensioned elements until tendons have been fully stressed and elongations have been approved by the Design Professional.

(c) Do not place concrete in supported floors until tendons on supporting floors have been stressed and elongations have been approved by the Design Professional.

(2) Non-prestressed steel reinforcing placement:

(a) Placement of non-prestressed steel reinforcement is specified in Section 033000 "Cast-in-Place Concrete." Coordinate placement of non-prestressed steel reinforcement with installation of post-tensioning tendons.

(3) Tendon installation:

(a) Install tendons according to installation drawings and procedures stated in PTI's "Field Procedures Manual for Unbonded Single Strand Tendons".

(1.) Tolerances: Comply with tolerances in ACI 423.6 for beams and slabs.

(4) Tendon supports: Provide continuous slab bolsters or bars supported on individual high chairs spaced at a maximum of 42 inches on center to ensure tendons remain in their designated positions during construction operations and concrete placement.
- (a) Support tendons as required to provide profiles shown on installation drawings. Position supports at high and low points and at intervals not exceeding 48 inches. Ensure that tendon profiles between high and low points are smooth parabolic curves.
- (b) Attach tendons to supporting chairs and reinforcement without damaging tendon sheathing.
- (c) Support slab tendons independent of beam reinforcement.

(5) Tendon profile shall be maintained within maximum allowable deviations from design profile as follows:
- (a) 1/4 inch for member depth less than or equal to 8 inches
- (b) 3/8 inch for member depth greater than 8 inches and less than or equal to 24 inches.
- (c) 1/2 inch for member depth greater than 24 inches.

(6) A minimum radius of curvature of 480-strand diameters shall be maintained for lateral deviations to avoid openings, ducts, and embedded items. A minimum of 2 inches (50 mm) of separation shall be maintained between tendons at locations of curvature.

(7) The limit of tendon bundles shall be five (5) tendons. Do not twist or entwine tendons within a bundle. Maintain a minimum distance of 12 inches between centers of adjacent bundles.

(8) If tendon locations conflict with non-prestressed reinforcement or embedded items, tendon placement governs. Obtain the Design Professional's approval before relocating tendons or tendon anchorages that interfere with one another.

(9) Deviations in horizontal spacing and location of slab tendons are permitted when required to avoid openings and inserts.

(10) Installation of anchorage devices shall be as follows:
- (a) Place anchorage devices at locations shown on approved installation drawings.
- (b) Do not switch fixed- and stressing-end anchorage locations.
- (c) Attach pocket formers, intermediate anchorage devices, and stressing-end anchorage devices securely to bulkhead forms. Install stressing-end and intermediate anchorage devices perpendicular to tendon axis.
- (d) Install tendons straight, without vertical or horizontal curvature, for a minimum of 12 inches behind stressing-end and intermediate anchorages.

(e) Embed intermediate anchorage devices at construction joints in first concrete placed at joint.
(f) Minimum splice length in reinforcing bars at anchorages is 24 inches. Stagger splices a minimum of 60 inches.
(g) Place fixed-end anchorage devices in formwork at locations shown on installation drawings. Support anchorages firmly to avoid movement during concrete placement.
(h) Remove loose caps on fixed-end anchorages, refill with post-tensioning coating, and re-attach caps to achieve a watertight enclosure when required.

(11) The minimum concrete cover shall be maintained according to ACI 423.6.

(12) A minimum distance of six (6) inches shall be maintained between tendons and openings.

(13) Tendon locations shall be marked on formwork with spray paint prior to concrete placement, if required.

(14) Sleeves shall not be installed within 36 inches of anchorages after tendon layout has been inspected.

(15) Specify the following:
(a) Do not install conduit, pipe, or embeds requiring movement of tendons after tendon layout has been inspected.
(b) Do not use couplers unless location has been approved by the Design Professional.

(16) Sheathing inspection and repair as follows:
(a) Inspect sheathing for damage after installing tendons. Repair damaged areas by restoring post-tensioning coating and repairing or replacing tendon sheathing as required.
(1.) Ensure that sheathing is watertight and there are no air voids.
(2.) Follow tape repair procedures in PTI's "Field Procedures Manual for Unbonded Single Strand Tendons".

(17) The maximum length of exposed strand behind anchorages shall be as follows:
(a) Fixed End: 12 inches.
(b) Intermediate and Stressing End: 1 inch.
(1.) Cover exposed strand with sheathing repair tape to prevent contact with concrete.

(18) Tendons that have a damaged strand shall be immediately removed and replaced.

k. Concrete placement:
(1) Place concrete as specified in Section 033000 "Cast-in-Place Concrete." Ensure compaction of concrete around anchorages.

(2) Ensure that position of tendon and non-prestressed-steel reinforcement does not change during concrete placement. Reposition tendons and non-prestressed-steel reinforcement moved during concrete placement to original location.

(3) Ensure that method of concrete placement does not damage tendon sheathing. Do not support pump lines, chutes, or other concrete-placing equipment on tendons.

l. Tendon stressing:

(1) Calibrate stressing jacks and gages at start of project and at least every six months thereafter if necessary. Keep copies of calibration certificates for each jack-and-gage pair on Project site that are available for inspection. Exercise care in handling stressing equipment to ensure that proper calibration is maintained.

(2) Stress tendons only under supervision of a qualified post-tensioning superintendent.

(3) Do not begin stressing operations until concrete strength has reached 3000 psi as indicated by compression tests of field-cured cylinders.

(4) Complete stressing within ninety six (96) hours of concrete placement.

(5) If concrete has not reached required strength, obtain Design Professional's approval to partially stress tendons and delay final stressing until concrete has reached required strength.

(6) Stage stress transfer girders and foundation mats if required according to schedule shown on the Contract Drawings.

(7) If detensioning and restressing of tendon is required, discard wedges used in original stressing and provide new wedges.

(8) Mark and measure elongations according to PTI's "Field Procedures Manual for Unbonded Single Strand Tendons." Measure elongations to closest 1/8 inch.

(9) Submit stressing records within one day of completion of stressing. If discrepancies between measured and calculated elongations exceed plus or minus seven (7) percent, resolve these discrepancies to satisfaction of the Design Professional.

(10) Prestressing will be considered acceptable if gage pressures shown on stressing record correspond to required stressing force and calculated and measured elongations agree within seven (7) percent.

(11) If measured elongations deviate from calculated elongations by more than seven (7) percent, additional testing, re-stressing, strengthening, or replacing of affected elements may be required.

m. Tendon finishing:

(1) Do not cut strand tails or cover anchorages until stressing records have been reviewed and approved by the Design Professional.

(2) Cut strand tails as soon as possible after approval of elongations.

(3) Install caps and sleeves on intermediate anchorages within one day of stressing, if required.

(4) Cut strand tails and install caps on stressing-end anchorages within one day of the Design Professional's acceptance of elongations, if required.

(5) Patch stressing pockets within one day of cutting strand tail. Clean inside surface of pocket to remove laitance or post-tensioning coating before installing patch material. Finish patches material flush with adjacent concrete.

n. Field quality control:

(1) Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

(2) Before concrete placement, testing agency will inspect the following for compliance with post-tensioning installation drawings and the Contract Documents:

(a) Location and number of tendons.
(b) Tendon profiles and cover.
(c) Installation of backup bars, hairpins, and other non-prestressed reinforcement shown on post-tensioning installation drawings.
(d) Installation of pocket formers and anchorage devices.
(e) Repair of damaged sheathing.
(f) Connections between sheathing and anchorage devices, if required.

(3) Testing agency will record tendon elongations during stressing.

(4) Testing agency will immediately report deviations from the Contract Documents to the Design Professional.

o. Work protection:

(1) Do not expose tendons to electric ground currents, welding sparks, or temperatures that would degrade components.

(2) Protect exposed components within one workday of their exposure during installation.

(3) Prevent water from entering tendons during installation and stressing.

(4) Provide weather protection to stressing-end anchorages if strand tails are not cut within 10 days of stressing the tendons.

p. Repairs:

(1) Submit repair procedure to the Design Professional for evaluation and approval.

(2) Do not proceed with repairs requiring removal of concrete unless authorized in writing by the Design Professional.

END OF DIVISION 03

DIVISION 04 MASONRY

04.1 General Requirements

This division identifies criteria for masonry design in Nova Southeastern University Buildings and site with the purpose of establishing minimum standards, acceptable to Nova Southeastern University (NSU), to be used as the basis of design for the NSU Main Campus, Fort Lauderdale, Florida.

All work provided under this division shall be performed and designed by a State of Florida Professional Structural Engineer.

The design of the masonry shall complement other disciplines designs in a sustainable and reliable fashion.

The Nova Southeastern University Campus and NSU Buildings masonry design must be designed to comply with the following objectives:

1. Sustainable Design under the criteria to meet LEED "Silver: Standards as a minimum.
2. Solutions with the best value considering a life cycle cost analysis to account for total project cost

These objectives are in line with the objectives of all Divisions and should be coordinated with all disciplines in a holistic way.

During the service life of a typical Nova Southeastern University building, many minor and major alterations and renovations will be necessary. The flexibility to adjust to alterations easily must be designed into the building and underground systems from the outset. The design of the masonry systems shall provide ways to construct future additions or renovations and allow modifications to be made in one area without causing major disruptions in other areas of the building. It is Nova Southeastern University's goal to build facilities equipped with the latest advances in technology. Making this concept a reality requires a comprehensive design for engineering systems that goes beyond the requirements of the immediate building program. It also requires a higher level of integration between architecture and engineering systems than one would usually expect in a typical building. The design of the masonry systems and other building components shall all be combined together to produce a building that meets the programmed sustainability rating (LEED "silver" rating) of the specific project. In addition, the design work shall be done in accordance with all rules, regulations, and requirements of all authorities having jurisdiction.

04.1.1 Submittals

The Design Professional must ensure that all submittals and shop drawings are coordinated with other disciplines.

04.2 Codes and Standards

04.2.1 Unit Masonry and Concrete Unit Masonry

The Design Professional shall specify that the Unit Masonry and Concrete Unit Masonry comply with the requirements of the applicable authorities having jurisdiction and with the in-force edition at the time of the project of the following codes and standards:

1. Florida Building Code (FBC)
2. American Society of Testing and Materials (ASTM)
3. American Concrete Institute (ACI)
4. The Masonry Society (TMS)
5. National Concrete Masonry Association (NCMA)
6. Portland Cement Association (PCA)
7. American Society of Civil Engineers (ASCE)
8. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)

04.3 Design Criteria

04.3.1 Concrete Unit Masonry

The Design Professional shall specify the Concrete Unit Masonry covered in this section.

1. Concrete Unit Masonry should include the following:
   a. Design interior masonry walls to resist 5 psf lateral pressure per Florida Building Code.
   b. Design exterior masonry walls to resist lateral wind pressures per Florida Building Code and ASCE7.
   c. Design interior and exterior load bearing masonry walls to resist gravity loads per Florida Building Code.
   d. Provide reinforced masonry per ACI 530 / ASCE7 or tie beams and columns within the masonry walls to resist wind pressures and gravity loads per Florida Building Code and ASCE7.
   e. Provide waterproofing prior to veneer finishes, compatible with the bonding requirements of the finish system.

04.4 Specific requirements (organized by CSI Master Format® 2013 Numbers & Titles)

04 22 00	Concrete Unit Masonry

04 22 00 Concrete Unit Masonry

Design Standards

1. The Design Professional shall design the concrete unit masonry as follows:

    a. LEED "silver" submittals:
        1) Product data for Credit MR 5.

    b. General requirements for masonry units:
        1) Use of defective units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed work.

        2) Fire-resistance ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

    c. Concrete masonry units (CMU):
        1) Regional materials: CMUs shall be manufactured within 500 miles of project site from aggregates and cement that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of project site.
            a) Shapes: Provide shapes indicated and for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

        2) Concrete masonry units (CMU) to comply with ASTM C90.

        3) Decorative concrete masonry units to comply with ASTM C90. Patterns to be as follows:
            a) Standard pattern, ground-face finish.
            b) Standard pattern, split-face finish.
            c) Standard pattern, split-ribbed finish.
            d) Scored vertically, standard finish.

        4) Pre-faced concrete masonry units to comply with ASTM C90: Lightweight hollow or solid concrete units complying with ASTM C90, with manufacturer's standard smooth resinous facing complying with ASTM C744.
            a) Colors and Patterns: As selected by Design Professional from manufacturer's full range.

        5) Concrete and masonry lintels as follows:
            a) Concrete lintels: ASTM C1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than CMUs. Lintels shall have Miami-Dade County or State of Florida product acceptance (NOA).

b) Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Section 033000 "Cast-in-Place Concrete" and with reinforcing bars indicated.

c) Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs with reinforcing bars placed as Indicated and filled with coarse grout.

d. Mortar and grout materials:

1) Regional materials: Aggregate for mortar and grout**,** cement, and lime shall be extracted, harvested, or recovered, as well as manufactured, within 500 miles of project site.

2) Portland cement: ASTM C150, Type I or II. Provide natural color or white cement as required to produce mortar color indicated.

3) Hydrated lime shall comply with ASTM C207, Type S.

4) Portland cement-lime mix to be a packaged blend of Portland cement and hydrated lime containing no other ingredients.

5) Masonry cement shall comply with ASTM C91.

6) Mortar cement shall comply with ASTM C1329.

7) Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979. Use only pigments with a record of satisfactory performance in masonry mortar.

8) Colored cement product: Packaged blend made from Portland cement and hydrated lime, masonry cement or mortar cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.

9) Aggregates for mortar shall comply with ASTM C144.

10) Aggregates for grout shall comply with ASTM C404.

11) Water-repellent admixture: Liquid water-repellent mortar admixture intended for use with CMUs, containing integral water repellent by same manufacturer.

12) Water shall be potable.

e. Reinforcing materials:

1) Uncoated steel reinforcing bars to comply with ASTM A615 or ASTM A 996, Grade 60.
2) General masonry joint reinforcement to comply with ASTM A951.

f. Ties and anchor materials:

1) Materials: Provide ties and anchors that are made from materials that comply with the following unless otherwise indicated.
   a) Hot-dip galvanized, carbon-steel wire: ASTM A82; with ASTM A153, Class B-2 coating.
   b) Steel sheet, galvanized after fabrication: ASTM A1008, Commercial Steel, with ASTM A153, Class B coating.
   c) Steel Plates, Shapes, and Bars: ASTMA 36.

2) Adjustable anchors for connecting to structural steel framing.

3) Adjustable anchors for connecting to concrete.

4) Partition top anchors.

5) Rigid anchors.

6) Anchor bolts.

g. Embedded flashing materials:
   1) Metal flashing to comply with SMACNA's "Architectural Sheet Metal Manual and as follows:
      a) Metal drip edge.
      b) Metal sealant stop

   2) Specify one of the following flexible flashings:
      a) Copper-Laminated Flashing.

      b) Rubberized-Asphalt Flashing.

      c) Elastomeric Thermoplastic Flashing.

      d) Ethylene-Propylene-Diene-Terpolymer (EPDM) Flashing.

   3) Single-wythe CMU flashing system if required.

   4) Solder and sealants for sheet metal flashings.

   5) Adhesives, primers, and seam tapes for flashings.

h. Miscellaneous masonry accessories as required:
   1) Compressible filler preformed control-joint gaskets and bond-breaker strips.

i. Masonry cell insulation:
   1) Loose-granular fill insulation or molded-polystyrene insulation units as required.

j. Mortar and grout mixes:
   1) General requirements:

a) Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

2) Do not specify the use of calcium chloride in mortar or grout.

3) Specify the use of Portland cement-lime, masonry cement or mortar cement mortar unless otherwise indicated.

4) Pre-blended, dry mortar mix if necessary.

5) Mortar for unit masonry shall comply with ASTM C270.

6) Pigmented mortar if required: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.
   a) Application: Use pigmented mortar for exposed mortar joints with the following units:
      (1.) Decorative CMUs.
      (2.) Pre-faced CMUs.

7) Colored-aggregate mortar: Specify production of required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
   a) Application: Use colored aggregate mortar for exposed mortar joints with the following units:
      (1.) Decorative CMUs.
      (2.) Pre-faced CMUs.

8) Grout for unit masonry to comply with ASTM C476.

k. Installation of the works:
   1) Tolerances:
      a) Specify dimensions and location of elements.
      b) Specify lines and levels.

   2) Joints thicknesses.

   3) Parameters for the laying of masonry walls.
      a) Specify bond pattern in exposed masonry.

   4) Parameters for mortar bedding and jointing.
      a) Specify the cutting of joints flush for masonry walls to receive plaster or other direct applied unless otherwise indicated.

   5) Masonry-cell insulation if required.
      a) Specify the pouring of granular insulation into cavities to fill void spaces or the installation of molded-polystyrene insulation units into masonry unit cells before laying units.

   6) Masonry joint reinforcing.

7) The anchoring of masonry to structural steel and concrete.

8) Type and installation of flashing.

9) Parameters for reinforced unit masonry installation.

l. Field quality controls:

1) Testing and inspection: Nova Southeastern University will engage special inspectors to perform tests and inspections and prepare reports. Inspectors will need access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to meet specified requirements shall be done at Contractor's expense.
   a) Inspections: Level 1 or Level 2 special inspections according to the “Florida Building Code” or the "International Building Code" as required.
   b) Testing frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
   c) Concrete masonry unit test: For each type of unit provided, according to ASTM C140 for compressive strength.
   d) Mortar aggregate ratio test (Proportion Specification): For each mix provided, according to ASTM C780.
   e) Grout test (Compressive Strength): For each mix provided, according to ASTM C1019.

m. Parging parameters.

n. Specify repairing, pointing and cleaning.
   1) In-progress cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
   2) Final cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
      a) Test cleaning methods on sample wall panel; leave one-half of panel un-cleaned for comparison purposes.
      b) Clean concrete masonry by cleaning method indicated in NCMA TEK 8- 2A applicable to type of stain on exposed surfaces.

END OF DIVISION 04.

DIVISION 05 METALS

05.1 General Requirements

This division identifies criteria for metal design in Nova Southeastern University Buildings and site with the purpose of establishing minimum standards, acceptable to Nova Southeastern University (NSU), to be used as the basis of design for NSU Main Campus, Fort Lauderdale Florida

All work shall be performed and designed by a State of Florida Professional Structural Engineer.

The Design Professional shall obtain from the Nova Southeastern University Project Manager the following information:

1. Geotechnical investigation reports

The design of the metal systems shall complement other disciplines designs in a sustainable and reliable fashion.

The Nova Southeastern University Campus and NSU Buildings steel design must be designed to comply with the following objectives:

1. Sustainable Design under the criteria to meet LEED “Silver” standards as a minimum.
2. Solutions with the best value considering a life cycle cost analysis to account for total project cost

These objectives are in line with the objectives of all Nova Southeastern University (NSU) Criteria Manual of Design and Specifications Standard Divisions and should be coordinated with all disciplines in a holistic way.

During the service life of a typical Nova Southeastern University building, many minor and major alterations and renovations will be necessary. The flexibility to adjust to alterations easily must be designed into the building and underground systems from the outset. The design of the steel systems shall provide ways to construct future additions or renovations and allow modifications to be made in one area without causing major disruptions in other areas of the building. It is Nova Southeastern University’s goal to build facilities equipped with the latest advances in technology. Making this concept a reality requires a comprehensive design for engineering systems that goes beyond the requirements of the immediate building program. It also requires a higher level of integration between architecture and engineering

systems than one would usually expect in a typical building. The design of the steel systems and other building components shall all be combined together to produce a building that meets the programmed sustainability rating (LEED "silver" rating) of the specific project. In addition, the design work shall be done in accordance with all rules, regulations, and requirements of all authorities having jurisdiction.

05.1.1 Submittals

The Design Professional must ensure that all submittals and shop drawings are coordinated with other disciplines. The Design Professional or General Contractor is advised that any and all field installation, revisions, deviations and changes in fabrication and/or layout shall be fully documented in writing in the project "as-built" which shall be submitted to Nova Southeastern University as part of the project close-out documents.

05.2 Codes and Standards

05.2.1 Structural Steel Framing, Steel Joist Framing, Steel Decking, Cold-Formed Metal Framing, Cold-Formed Metal Trusses and Metal Fabrication.

The Design Professional shall specify that the Structural Steel Framing, Steel Joist Framing, Steel Decking, Cold-Formed Metal Framing, Cold-Formed Metal Trusses and Metal Fabrication. Comply with the requirements of the applicable authorities having jurisdiction and with the in-force edition at the time of the project of the following codes and standards:

1. Florida Building Code (FBC)
2. American Society of Testing and Materials (ASTM)
3. American Institute of Steel Construction (AISC)
4. Steel Construction Manual
5. American National Standards Institute (ANSI)
6. The Society for Protective Coatings (SSPC)
7. Research Council on Structural Connections (RCSC)
8. American Welding Society (AWS)
9. Steel Joist Institute (SJI)
10. American Iron and Steel Institute (AISI)
11. Cold-Formed Steel Engineers Institute (CFSEI)
12. Masters Painters Institute (MPI)
13. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)
14. Military Specification (MIL)

05.3 Design Criteria

05.3.1 Structural Steel Framing, Steel Joist Framing, Steel Decking, Cold-Formed Metal Framing, Cold-Formed Metal Trusses and Metal Fabrication.

The Design Professional shall specify the Structural Steel Framing, Steel Joist Framing, Steel Decking, Cold-Formed Metal Framing, Cold-Formed Metal Trusses and Metal Fabrication. Covered in this section.

1. Structural steel framing should include the following:
   a. Design structural steel framing members to resist gravity and lateral load effects Indicated in the applicable Florida Building Code and ASCE7.

b. Design lateral load resisting systems so that lateral drift does not exceed HEIGHT/400 for a wind return period of 10 years.
c. Structural steel design shall be per the current AISC Steel Construction Manual utilizing ASD or LRFD methods of design. Camber steel floor members upward sufficient to compensate for the slab dead weight and any additional dead load the designers believe relevant.
d. Structural steel members that will receive sprayed fireproofing should not be painted to insure adhesion of the fireproofing.
e. The design of steel-to-steel connections may be delegated to the fabricator's engineer. It is suggested that "Single Plate Connections" and "All-Bolted Double Angle Connections", as indicated in the AISC Steel Construction Manual, be considered for simple, typical connections.
f. Specify forces or a percentage of the "Maximum Total Uniform Load, kips" table of the AISC Steel Construction Manual as the criteria for connection design.
g. Specify forces in braced steel frames to allow the fabricator's delegated engineer to design these connections.
h. The Engineer of Record shall design the base plates and anchor bolts for all columns.

2. Steel joist framing should include the following:
   a. Design steel joists and joist girders to resist gravity and wind uplift load effects indicated in the applicable Florida Building Code and ASCE 7.
   b. Select and specify steel joists and joist Girders from the Steel Joist Institutes publication entitled, "Standard Specifications and Load and weight Tables for Steel joists and Joist Girders"
   c. Roof joists subject to uplift loading shall have a line of bridging at the first bottom chord panel point.
   d. Indicate on design drawings the net joist uplift so that the joist design professional may design the joists and joist girders to resist such loading.

3. Steel decking should include the following:
   a. Design steel deck per the requirements of the Steel Deck Institute. Use, as a minimum, 22-gauge deck thickness.
   b. Provide as part of design documents pour stops, closures and other steel deck accessories necessary.
   c. Design steel floor deck to resist gravity load effects indicated in the applicable Florida Building Code and ASCE7.
   d. Design steel rood deck to resist gravity and wind uplift load effects indicated in the applicable Florida Building Code and ASCE7.
   e. Exercise care in the spacing of supporting members near building edges so that roof deck can support the increased net uplift loading and so that fasteners have capacity to resist uplift and diaphragm forces concurrently.
   f. Select floor deck height and gauge to support gravity loads and, also, so that it can span between supporting members, when acting as a form only for the weight of wet concrete plus construction loads, without shoring of the deck.

4. Cold-formed metal framing should include the following:
   a. Design interior cold-formed metal vertical framing to resist 5 psf lateral pressures per Florida Building Code.

b. Design exterior cold-formed metal framing to resist lateral wind pressure per Florida Building Code and ASCE7.
c. Framing for exterior soffits shall be designed for wind pressure per Florida Building Code and ASCE7. Provide vertical strut members to brace the soffit framing to the structure above. Struts shall be spaced on a 4' by 4' module.
d. Design interior cold-formed metal horizontal framing to resist gravity loads per Florida Building Code.

5. Cold-formed metal trusses should include the following:
   a. Design trusses to resist gravity loads specified in the Florida Building Code.
   b. Design trusses to resist uplift forces per the Florida Building Code and ASCE7.
   c. The attachment of trusses to the building structure shall account for the simultaneous application of (1) uplift force, (2) horizontal wall parallel to trusses and (3) horizontal wall loads perpendicular to trusses.
   e. Trusses shall be galvanized.

6. Metal fabrication should include the following:
   a. Design safeguards and railings for loads required by the Florida Building Code.

05.04 Specific Requirements (organized by CSI Master Format® 2013 Numbers & Titles)

05 12 00	Structural Steel Framing
05 21 00	Steel Joist Framing
05 31 00	Steel Decking
05 40 00	Cold-Formed Metal Framing
05 44 00	Cold-Formed Metal Trusses
05 50 00	Metal Fabrication

05 12 00 Structural Steel Framing

Design Standards

1. The Design Professional shall design the structural steel framing as follows:

   a. Performance requirements:
      1) Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated.
         a) Select and complete connections using schematic details indicated and AISC 360.
         b) Use LRFD; data are given at factored-load level or ASD; data are given at service-load level.

      2) Moment connections: Type PR, partially or FR, fully restrained.

b. LEED "silver" submittals:
   1) Product data for Credit MR 4.

   2) Laboratory Test Reports for Credit IEQ 4

c. Quality assurance parameters:
   1) Fabricator qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

   2) Installer qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

   3) Welding qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

   4) Compliance with applicable provisions of the following specifications and documents:
      a) AISC 303.
      b) AISC 360.
      c) RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

d. Structural steel products:
   1) Structural steel materials as required:
      a) Recycled content of steel products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 50 percent.
      b) W-Shapes: ASTM A992 or ASTM A572, Grade 50.
      c) Channels, angles, M, S-shapes: ASTM A36 or ASTM A572, Grade 50.
      d) Plate and bar: ASTM A36 or ASTM A572, Grade.
      e) Cold-formed hollow structural sections: ASTM A500, Grade B or C, structural tubing.
      f) Steel pipe: ASTM A53, Type E or S, Grade B.
      g) Welding electrodes: Comply with AWS requirements

   2) Bolts, connectors and anchors as required:
      a) High-Strength Bolts, Nuts, and Washers: ASTM A325 , Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436 , Type 1, hardened carbon-steel washers; all with plain finish.
         (1.) Direct-Tension Indicators: ASTM F959, Type 325, compressible-washer type with plain finish.
      b) High-strength bolts, nuts, and washers: ASTM A490, Type 1, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436 , Type 1, hardened carbon-steel washers with plain finish.

(1.) Direct-tension indicators: ASTM F959, Type 490, Type 10.9, compressible-washer type with plain finish.

c) Zinc-coated high-strength bolts, nuts, and washers: ASTM A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers.
(1.) Finish: Hot-dip zinc coating, mechanically deposited zinc coating, hot-dip or mechanically deposited zinc coating.
(2.) Direct-tension indicators: ASTM F959, Type 325, compressible-washer type with mechanically deposited zinc coating, mechanically deposited zinc coating or baked epoxy-coated finish.

d) Tension-control, high-strength bolt-nut-washer assemblies: ASTM F1852, Type 1. heavy-hex or round head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
(1.) Finish: Plain or mechanically deposited zinc coating.

e) Shear connectors: ASTM A108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

f) Unheaded anchor rods: ASTM F 1554, Grade 36 or ASTM F1554, Grade 55, weldable.
(1.) Configuration: Straight or hooked.
(2.) Finish: Plain, hot-dip zinc coating, ASTM A153, Class C or mechanically deposited zinc coating, ASTM B695, Class 50.
(3.) Headed anchor rods: ASTM F1554, Grade 36 or ASTM F1554, Grade 55, weldable, straight.
Finish: Plain, hot-dip zinc coating, ASTM A153, Class C or Mechanically deposited zinc coating, ASTM B695, Class 50.

g) Threaded rods: ASTM A36 or ASTM A193, Grade B7.
(1.) Finish: Plain, hot-dip zinc coating, ASTM A153, Class C or Mechanically deposited zinc coating, ASTM B 695, Class 50.

h) Clevises and Turnbuckles: Made from cold-finished carbon steel bars, ASTM A108, Grade 1035.

3) Primer requirements as follows:
a) Low-emitting materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers".
b) Primer: SSPC-Paint 25, Type I or Type II, zinc oxide, alkyd, linseed oil primer.
c) Primer: Fabricator's standard lead- and chromate-free, non-asphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

4) Grout requirements as follows:
   a) Metallic, shrinkage-resistant grout: ASTM C1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
   b) Nonmetallic, shrinkage-resistant grout: ASTM C1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

5) Fabrication requirements as follows:
   a) Structural steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
   b) Shear connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

6) Shop connection requirements as follows:
   a) High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts" for type of bolt and type of joint specified.
      (1.) Joint Type: Snug tightened, pre-tensioned or slip critical.
   b) Weld connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

7) Shop-priming requirements:
   a) Shop-prime steel surfaces except the following:
      (1.) Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
      (2.) Surfaces to be field welded.
      (3.) Surfaces to be high-strength bolted with slip-critical connections.
      (4.) Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
      (5.) Galvanized surfaces.
   b) Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
      (1.) SSPC-SP 2, "Hand Tool Cleaning".
      (2.) SSPC-SP 3, "Power Tool Cleaning".
   c) Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

8) Source quality control requirements:
   a) Testing agency: Nova Southeastern University will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
      (1.) Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
   b) Correct deficiencies in work that test reports and inspections indicate does not comply with the Contract Documents.
   c) Bolted connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts".
   d) Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
      (1.) Liquid penetrant inspection: ASTM E 165.
      (2.) Magnetic particle inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
      (3.) Ultrasonic inspection: ASTM E 164.
      (4.) Radiographic inspection: ASTM E 94.

e. Execution of steel structural framing:
   1) Erection requirements as follows:
      a) Set structural steel accurately in locations, to elevations indicated, and according to AISC 303 and AISC 360.
      b) Base Bearing and Leveling Plates as required: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
         (1.) Set plates for structural members on wedges, shims, or setting nuts as required.
         (2.) Weld plate washers to top of base plate.
         (3.) Snug-tighten or Pretension anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
         (4.) Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow curing. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
      c) Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

   2) Field connections requirements as follows:
      a) High-strength bolts: High-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A325 or A 490 Bolts" for type of bolt and type of joint specified.

(I) Joint Type: Snug tightened, pre-tensioned or slip critical.

b) Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

(1.) Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

3) Field quality control requirements:

a) Testing Agency: Nova Southeastern University will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

b) Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts".

c) Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

(1.) Liquid Penetrant Inspection: ASTM E 165.

(2.) Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.

(3.) Ultrasonic Inspection: ASTM E 164.

(4.) Radiographic Inspection: ASTM E 94.

d) Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

05 21 00 Steel Joist Framing

Design Standards

1. The Design Professional shall design the steel joist framing as follows:

a. LEED "silver" submittals:

1) Product data for Credit MR 4.

2) Laboratory Test Reports for Credit IEQ 4

b. Steel joist framing submittals:

1) Include layout, designation, number, type, location, and spacing of joists.

2) Include joining and anchorage details, bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.

c. Manufacturer qualifications:

1) Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications".

d. Welding qualifications:
   1) Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code – Steel".

e. Recycling requirements:
   1) Recycled Content of Steel Products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 50 percent.

f. Steel joist requirements:
   1) Design K-series steel joists:
      (a) Steel joists of type indicated shall be manufactured according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications", with steel-angle top- and bottom-chord members, under slung ends, and parallel top chord.
      (b) Steel Joist Substitutes shall be manufactured according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications", with steel-angle or -channel members.

   2) Design longspan steel joists:
      (a) Longspan steel joists shall be manufactured according to "Standard Specifications for Longspan Steel Joists, LH-Series and Deep Longspan Steel Joists, DLH-Series" in SJI's "Specifications," with steel-angle top and bottom chord members; of joist type and end and top chord arrangements as indicated.

   3) Joist girders:
      (a) Joist girders shall be manufactured according to "Standard Specifications for Joist Girders" in SJI's "Specifications," with steel-angle top- and bottom-chord members; with end and top-chord arrangements as indicated.

   4) Primers:
      a) Low-emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers".
         (1.) Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.

   5) Joist accessories:
      a) Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.

b) Schematically indicated bridging. Detail and fabricate according to SJI's "Specifications." Furnish additional erection bridging if required for stability.

c) Furnishing of ceiling extensions, either extended bottom chord elements or a separate extension unit of enough strength to construction. Extend ends to within 1/2 inch of finished wall surface unless otherwise indicated.

6) Carbon-steel bolts and threaded fasteners: ASTM A307, Grade A, carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.

a) Finishes: Plain, uncoated, Hot-dip zinc coating, ASTM A153, Class C or Mechanically deposited zinc coating, ASTM B695, Class 50.

7) High-strength bolts, nuts, and washers: ASTM A325, Type 1, heavy hex steel structural bolts; ASTM A563 heavy hex carbon-steel nuts; and ASTM F436 hardened carbon-steel washers.

a) Finishes: Plain, Hot-dip zinc coating, ASTM A153, Class C or mechanically deposited zinc coating, ASTM B695, Class 50.

8) Furnishing of miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

g. Cleaning and shop painting:

1) Cleaning and removal of loose scale, heavy rust, and other foreign materials from fabricated joists and accessories and the application of one coat of shop primer.

h. Installation of steel joists:

1) Joists shall not be installed until supporting construction is in place and secured.

2) Joists and accessories shall be installed plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications", joist manufacturer's written recommendations, and requirements in this Section as follow:

a) Before installation, splice joists delivered to Project site in more than one piece.

b) Space, adjust, and align joists accurately in location before permanently fastening.

c) Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.

3) Field welding of joists to supporting steel bearing plates and/or framework. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

(4) Bolting of joists to supporting steel framework using carbon-steel bolts as required.

5) Bolting of joists to supporting steel framework using high-strength structural bolts. Comply with Research Council on Structural Connection's "Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts" for high-strength structural bolt installation and tightening requirements.

6) The installation and connecting of bridging shall be done concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

i. Field quality control requirements:
1) Nova Southeastern University will engage a qualified independent testing and inspecting agency to inspect field welds and bolted connections and to perform field tests and inspections and prepare test and inspection reports.

05 31 00 Steel Decking

Design Standards

1. The Design Professional shall design the steel decking as follows:

a. LEED "silver" submittals:
1) Product data for Credit MR 4.

2) Laboratory Test Reports for Credit IEQ 4

b. Steel decking submittals:
1) Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

c. Quality assurance requirements:
1) Testing agency qualifications: Qualified according to ASTM E329 for testing indicated.

2) Welding qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel".

d. Performance requirements:
1) Design to be based upon AISI Specifications: Complying with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members".

e. Recycling requirements:
1) Recycled Content of Steel Products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

f. Low-emitting paint and coatings as follows:
1) Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

g. Steel decking as follows:
1) Roof decking as follows:

a) Fabrication of panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

(1.) Prime-Painted Steel Sheet: ASTM A1008, Structural Steel Grade 33, Grade 40 or Grade 80 minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer. Color as required.

(2.) Galvanized-steel sheet: ASTM A653, Structural Steel, Grade 33, Grade 40 or Grade 80, G60 or G90 zinc coating.

(3.) Galvanized and Shop-Primed Steel Sheet: ASTM A653, Structural Steel, Grade 33, Grade 40 or Grade 80, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer. Color as required.

(4.) Specify deck profile as necessary.

(5.) Specify profile depth as necessary.

(6.) Design and specify uncoated steel thickness.

2) Composite floor decking as follows:

a) Fabrication of panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

(1.) Prime-Painted Steel Sheet: ASTM A 1008, Structural Steel Grade 33, Grade 40 or Grade 80 minimum, with top surface phosphatized and unpainted and underside surface shop primed with manufacturers' standard gray or white baked-on, rust-inhibitive primer.

(2.) Galvanized-Steel Sheet: ASTM A653, Structural Steel, Grade 33 or G30, G60 or G90 zinc coating.

(3.) Galvanized and Shop-Primed Steel Sheet: ASTM A 653/, Structural Steel, Grade 33, G30or G60 zinc coating; with unpainted top surface and cleaned and pretreated bottom surface primed with manufacturer's standard gray or white baked-on, rust-inhibitive primer.

(4.) Specify profile depth.

(5.) Design and specify uncoated steel thickness.

3) Non-composite form deck as follows:

a) Fabrication of ribbed-steel-sheet non-composite form-deck panels to comply with "SDI Specifications and Commentary for Non-composite Steel Form Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

(1.) Uncoated Steel Sheet: ASTM A1008, Structural Steel Grade 33, Grade 40 or Grade 80 minimum.

(2) Prime-Painted Steel Sheet: ASTM A 1008, Structural Steel Grade 33, Grade 40 or Grade 80 minimum, with top and underside surface shop primed with manufacturer's standard baked-on, rust-inhibitive primer. Color as required.

(3.) Galvanized-Steel Sheet: ASTM A653, Structural Steel Grade 33, Grade 40 or Grade 80, G30, G60 or G90 zinc coating.
(4.) Galvanized and Shop-Primed Steel Sheet: ASTM A 653, Structural Steel Grade 33 or Grade 80, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer. Color as required.
(5.) Specify profile depth.
(6.) Design and specify uncoated steel thickness.

4) Accessories as follows:
a) Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

h. Installation of steel decking as follows:
1) Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

i. Field quality control requirements:
1) Testing Agency: Nova Southeastern University will engage a qualified testing agency to perform tests and inspections.

2) Field welds will be subject to inspection.

3) Testing agency will report inspection results promptly and in writing to Contractor and Design Professional.

4) Remove and replace work that does not comply with specified requirements.

5) Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

j. Protection of completed work.
1) Galvanizing repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.

2) Painting repairs: Wire brush and clean rust spots, welds, and abraded areas on both surfaces or on top surface of prime-painted deck immediately after installation, and apply repair paint.

05 40 00 Cold-Formed Metal Framing

Design Standards

1. The Design Professional shall design the cold-formed metal framing as follows:

a. LEED “silver” submittals:
   1) Product data for Credit MR 4.

b. Cold-formed metal framing submittals:
   1) Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.

   2) Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

c. Quality assurance requirements:
   1) Specify product tests: Mill certificates or data from a qualified independent testing agency.

   2) Specify qualifications for welding: Qualify procedures and personnel according to AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

   3) Specify compliance with AISI S230 "Standard for Cold-Formed Steel Framing - Prescriptive Method for One and Two Family Dwellings", if required.

d. Performance requirements:
   1) Unless more stringent requirements are indicated, specify compliance with AISI S100 and AISI S200.

   2) Fire-resistance ratings shall comply with ASTM E119. Testing by Nova Southeastern University testing agency.

   3) Design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

   4) Recycle content of steel products as follows:
      a) Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

e. Cold-formed metal framing requirements:
   1) General requirements for cold-formed metal framing as follows:
      a) Steel sheet to comply with steel sheet: ASTM A1003, structural grade, Type H, metallic coated, of grade and coating weight as follows:
         (1.) Grade: ST33H, ST50H, or as required by structural performance
         (2.) Coating: G60, A60, AZ50, GF30, G90 or equivalent.
      b) Steel sheet for vertical deflection or drift clips:
         ASTM A653, structural steel, zinc coated, of grade and coating as follows:
         (1.) Grade: 33, 50, Class 1 or as required by structural performance.
         (2.) Coating: G60 or G90.

2) Load-bearing wall framing requirements:
   a) Steel studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
      (1.) Specify minimum base metal thickness.
      (2.) Specify flange width.
      (3.) Specify section properties such as minimum allowable calculated section modulus, moment of inertia, and allowable moment.
   b) Steel track as follows: Manufacturer's standard U-shaped steel track, of web depths indicated, un-punched, with straight flanges, and matching minimum base-metal thickness of steel studs.
   c) Steel box or back-to-back headers:
   Manufacturer's standard C-shapes used to form header beams, of web depths indicated, un-punched, with stiffened flanges, and as follows:
      (1.) Specify minimum base metal thickness.
      (2.) Specify flange width.
      (3.) Specify section properties such as minimum allowable calculated section modulus, moment of inertia, and allowable moment.

3) Exterior non-load-bearing wall framing requirements:
   a) Steel studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
      (1.) Specify minimum base metal thickness.
      (2.) Specify flange width.
      (3.) Specify section properties such as minimum allowable calculated section modulus, moment of inertia, and allowable moment.
   b) Steel track: Manufacturer's standard U-shaped steel track, of web depths indicated, un-punched, with un-stiffened flanges, and matching minimum base-metal thickness of steel studs.
   c) Vertical deflection clips: Manufacturer's standard bypass or head clips, capable of accommodating upward and downward vertical displacement of primary Structure through positive mechanical attachment to stud web.
   d) Single deflection track if required: Manufacturer's single, deep-leg, U-shaped steel track; un-punched, with un-stiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure.
   e) Double deflection tracks if required: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; un-punched, with un-stiffened flanges.
   f) Drift clips if required: Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure through positive mechanical attachment to stud web and structure.

4) Framing accessories as follows:
   a) Specify the fabrication of the steel-framing accessories from steel sheet, ASTM A 1003, structural grade, Type H, metallic coated, of same grade and coating weight used for framing members.
   b) Specify that accessories be provided with manufacturer's standard thickness and configuration.

5) Anchors, clips and fasteners when required:
   a) Steel shapes and clips: ASTM A36, zinc coated by hot-dip process according to ASTM A123.
   b) Anchor bolts: ASTM F1554, Grade 36 or Grade 55, threaded carbon-steel, hex-headed bolts, headless hooked bolts or headless bolts with encased end threaded, and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153, Class C or mechanical deposition according to ASTM B695, Class 50.
   c) Expansion anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E488 conducted by a qualified testing agency.
   d) Power-actuated anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E1190 conducted by a qualified testing agency.
   e) Mechanical fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
      (1.) Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

6) Miscellaneous materials as follows:
   a) Galvanizing repair paint: SSPC-Paint 20 or MIL-P-21035B, ASTM A780.
   b) Cement grout: Portland cement, ASTM C150, Type I; and clean, natural sand, ASTM C404.
   c) Non-metallic, non-shrink grout: Premixed, non-metallic, non-corrosive, non-staining grout containing selected silica sands, Portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C1107, with fluid consistency and 30-minute working time.
   d) Shims: Load bearing, high-density multi-monomer plastic, and non-leaching; or of cold-formed steel of same grade and coating as framing members supported by shims.
   e) Sealer gaskets: Closed-cell neoprene foam, selected from manufacturer's standard widths to match width of bottom track or rim track members.

f. Cold-formed metal framing installation:

1) Installation of load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab when necessary to ensure a uniform bearing surface on supporting concrete or masonry construction.

2) Installation of sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations as required.

3) Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

4) The installation of cold-formed steel framing shall be according to SI S200 and to manufacturer's written instructions unless requirements that are more stringent are indicated.

5) Installation of temporary bracing wherever necessary.

6) Installation of insulation as required.

7) Erection tolerances.

8) Installation of load-bearing walls as required.

9) Installation of non-load-bearing walls as required.

g. Field quality control requirements:

1) Testing: Nova Southeastern University will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports. Nova Southeastern University can at its discretion request that the General Contractor hire a independent agency to perform testing. Design Professionals or General Contractors are advised to request a determination by NSU for the proposed scope of work.

2) Field and shop welds will be subject to testing and inspecting.

3) The testing agency report tests results shall be transmitted promptly and in writing to Contractor and Design Professional.

4) Specify the removal and replacement work where test results indicate that it does not comply with specified requirements.

5) Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

h. Protection of completed work.

1) Galvanizing repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

2) Final protection and maintenance of conditions shall be provided in a manner acceptable to manufacturer and installer that ensures that cold-formed steel framing is without damage or deterioration at time of substantial completion.

05 44 00 Cold-Formed Metal Trusses

Design Standards

1. The Design Professional shall design the cold-formed metal trusses as follows:

   a. LEED "silver" submittals:
      1) Product data for Credit MR 4.

   b. Cold-formed metal trusses submittals:
      1) Include layout, spacings, sizes, thicknesses, and types of cold-formed steel trusses; fabrication; and fastening and anchorage details, including mechanical fasteners.
      2) Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

      3) Delegated-Design Submittal: For cold-formed steel trusses.

   c. Quality assurance requirements as follows:
      1) Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

      2) Product Tests: Mill certificates or data from a qualified testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

      3) Welding Qualifications: Qualify procedures and personnel according to the following:
         a) AWS D1.1/D1.1M, "Structural Welding Code - Steel".
         b) AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel".

   d. Specify performance requirements if required as follows:
      1) If a delegated design is required: Engage a qualified professional engineer to design cold-formed steel framing.

      2) Structural performance: Provide cold-formed steel trusses capable of withstanding design loads within limits and under conditions indicated:
         a) Design loads: As indicated.
         b) Deflection limits: Design trusses to withstand design loads without deflections greater than the following:
            (1.) Floor trusses: Specify vertical deflection for total loads of the span.
            (2.) Roof trusses: Specify vertical deflection of the span.

(3.) Scissor roof trusses: Specify horizontal deflection at reactions.

3) Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.

e. Cold-formed steel framing design standards:
1) Floor and roof systems: Design according to AISI S210.

2) Lateral design: Design according to AISI S213.

3) Roof trusses: Design according to AISI S214.

4) Fire-resistance ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

f. Cold-formed steel truss materials as follows:
1) Recycled content of steel products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

2) Steel sheet: ASTM A1003, structural grade, Type H, metallic coated, of grade and coating weight as follows:
a) Grade as required by structural performance.
b) Coating: G60, A60, AZ50, or GF30 or equivalent.

g. Roof truss members: Manufacturer's standard steel sections or as required.
1) Connecting flange width: Specify minimum at top and bottom chords connecting to sheathing or other directly fastened construction.
2) Minimum base-metal thickness.
3) Section properties: Minimum allowable calculated section modulus, moment of inertia, and allowable moment.

h. Floor truss members: Manufacturer's standard steel sections or as required.
1) Connecting flange width: Specify minimum at top and bottom chords connecting to sheathing or other directly fastened construction.
2) Minimum base-metal thickness.
3) Section properties: Minimum allowable calculated section modulus, moment of inertia, and allowable moment.

i. Accessories:
1) Fabricate steel-framing accessories from steel sheet, ASTM A1003, structural grade, Type H, metallic coated, of same grade and coating weight used for truss members.

2) Provide accessories of manufacturer's standard thickness and configuration unless otherwise indicated.

j. Anchors, clips and fasteners when required:

1) Steel shapes and clips: ASTM A36, zinc coated by hot-dip process according to ASTM A123.

2) Anchor bolts: ASTM F1554, Grade 36 or Grade 55, threaded carbon-steel, hex-headed bolts, headless hooked bolts or headless bolts with encased end threaded, and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153, Class C or mechanical deposition according to ASTM B695, Class 50.

3) Expansion anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E488 conducted by a qualified testing agency.

4) Power-actuated anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E1190 conducted by a qualified testing agency.

5) Mechanical fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
   (a) Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

k. Miscellaneous materials:

1) Galvanizing repair paint: SSPC-Paint 20 or MIL-P-21035B or ASTM A780.

2) Shims: Load bearing, of high-density multi-monomer plastic, non-leaching; or of cold-formed steel of same grade and coating as framing members supported by shims.

l. Fabrication:

1) Fabrication of cold-formed steel trusses and accessories according to referenced AISI's specifications and standards, and/or manufacturer's written instructions.

2) Fastening of cold-formed steel truss members as required.
   a) Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

3) Fastening of other materials to cold-formed steel trusses by welding, bolting, pneumatic pin fastening, or screw fastening as required.

4) Fabrication tolerances:

m. Execution requirements:
1) Fire resistive materials installation as follows:
a) Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
b) After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed steel trusses without reducing thickness of fire-resistive materials below that is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.
2) Installation:
a) Installation, bridging, and bracing of cold-formed steel trusses according to AISI S200, AISI S214, AISI's "Code of Standard Practice for Cold-Formed Steel Structural Framing," and manufacturer's written instructions unless requirements that are more stringent are indicated.
b) The installation of cold-formed steel trusses and accessories shall be plumb, square, and true to line, and with connections securely fastened.
c) Cold-formed steel trusses fastened by welding or mechanical fasteners Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
d) Installation of temporary bracing and supports.
e) Truss Spacing.
f) The installation of continuous bridging and permanently braced
t russes shall be designed according to CFSEI's Tech Note 551e, "Design Guide: Permanent Bracing of Cold-Formed Steel Trusses".
g) Erection tolerances.

n. Field quality control requirements:
1) Special Inspections: Nova Southeastern University will engage a qualified special inspector to perform inspections.

2) Testing Agency: Nova Southeastern University will engage a qualified testing agency to perform tests and inspections.

3) Field and shop welds will be subject to testing and inspecting.

4) Nova Southeastern University's special testing inspector and testing agency to prepare test and inspection reports.

o. Repairs and protection of completed works:
1) Galvanizing repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

2) Final protection and maintenance conditions, in a manner acceptable to manufacturer and installer that ensure that cold-formed metal trusses are without damage or deterioration at time of substantial completion.

05 50 00 Metal Fabrication

Design Standards

1. The Design Professional shall design the metal fabrication as follows:

   a. LEED "silver" submittals:
      1) Product data for Credit MR 4.

      2) Laboratory Test Reports for Credit IEQ 4

   b. Performance requirements:
      1) If a delegated design is required: Engage a qualified professional engineer to design the aluminum ladders.

      2) Structural performance of aluminum ladders: Aluminum ladders, including landings, shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

      3) Specify an allowance for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
         a) Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

   c. Submittals as follows:
      1) Show fabrication and installation details for metal fabrications.
         a) Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

      2) Samples for each type and finish of extruded nosing and tread.

      3) Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

   d. Product requirements:
      1) Materials and surfaces as follows:
         a) Provide materials with smooth, flat surfaces without blemishes.

2) Ferrous metals:
   a) Recycled content of steel products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.
   b) Steel plates, shapes, and bars: ASTM A36.
   c) Stainless-steel bars and shapes: ASTM A276, Type 304 or Type 316L.
   d) Rolled-steel floor plate: ASTM A786, rolled from plate complying with ASTM A36 or ASTM A283, Grade C or D.
   e) Rolled-stainless-steel floor plate: ASTM A 793.
   f) Steel tubing: ASTM A500, cold-formed steel tubing.
   g) Steel pipe: ASTM A 53, standard weight (Schedule 40) unless otherwise indicated.
   h) Slotted channel framing: Cold-formed metal box channels struts complying with MFMA-4.
      (1.) Specify size of channels.
      (2.) Specify materials:
      Galvanized steel, ASTM A 653, commercial steel, Type B or structural steel, Grade 33, with G90 coating; specify nominal thickness.
      Cold-rolled steel, ASTM A 1008 commercial steel, Type B or structural steel, Grade 33. Specify minimum thickness; unfinished or coated with rust-inhibitive, baked-on, acrylic enamel or hot-dip galvanized after fabrication.
   i) Cast iron: Either gray iron, ASTM A48, or malleable iron, ASTM A47.

3) Non-ferrous metals:
   a) Aluminum extrusions: ASTM B 221, Alloy 6063-T6.
   b) Aluminum-alloy rolled tread plate: ASTM B632, Alloy 6061-T6.
   c) Aluminum castings: ASTM B26, Alloy 443.0-F.
   d) Bronze extrusions: ASTM B455, Alloy UNS No. C38500 (extruded architectural bronze).
   e) Bronze castings: ASTM B584, Alloy UNS No. C83600 (leaded red brass) or No. C84400 (leaded semi red brass).
   f) Nickel Silver Castings: ASTM B584, Alloy UNS No. C97600 (20 percent leaded nickel bronze).

4) Fasteners:
   a) Specify if required Type 304 or Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5, at exterior walls.
      (1.) Provide stainless-steel fasteners for fastening aluminum.
      (2.) Provide stainless-steel fasteners for fastening stainless steel.
      (3.) Provide stainless-steel fasteners for fastening nickel silver.
      (4.) Provide bronze fasteners for fastening bronze.

5) Cast-in-place anchors in concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47 malleable iron or ASTM A27 cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329.

6) Post-installed anchors: Torque-controlled expansion anchors or chemical anchors.
   a) Material for interior locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 Class Fe/Zn 5, unless otherwise indicated.
   b) Material for exterior locations and where stainless steel is indicated: Alloy Group 1 or Group 2 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

7) Slotted-channel inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, indicated with anchor straps or studs. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B633, Class Fe/Zn 5, as needed for fastening to inserts.

8) Miscellaneous materials as follows:
   a) Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
   b) Specify shop primers, universal shop primer and epoxy zinc-rich primer.
   c) Specify galvanizing repair paint, bituminous paint and non-shrink, non-metallic grout: Factory-packaged.

9) Fabrication:
   a) Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.

10) Miscellaneous framing and support:
   a) Specify steel framing and supports not specified in other sections and as needed to complete the work. Specify the fabrication of the units from steel shapes, plates, and bars of welded construction unless otherwise indicated.

11) Pre-fabricated building columns as necessary:
   a) Prefabricated building columns consisting of load-bearing structural-steel members protected by concrete fireproofing encased in an outer non-load-bearing steel shell. Specify the fabrication of connections to comply with details shown or as needed to suit type of structure indicated.
      (1.) Fire-resistance rating of prefabricated building columns to be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for ratings indicated, based on testing

according to ASTM E119. Fire-Resistance Rating: As indicated.

12) Shelf angles as required:
    a) Fabrication of shelf angles from steel angles of sizes indicated and for attachment to concrete framing.

13) Metal ladders:
    a) Specify as follows:
        (1.) Comply with ANSI A14.3 unless otherwise indicated.
        (2.) For elevator pit ladders, comply with ASME A17.1.
    b) Steel ladders:
        (1.) Specify side rails spacing, material and finishes.
        (2.) Specify rung spacing, materials and finishes.
    c) Aluminum ladders:
        (1.) Specify side rails spacing.
        (2.) Specify rung spacing, materials and finishes.
    d) Ladder safety cages as follows:
        (1.) Specify fabrication of ladder safety cages to comply with ANSI A14.3. Specify assembly by welding or with stainless-steel fasteners and include galvanizing the steel, including brackets and fasteners.
        (2.) Specify location and spacing of primary hoops and secondary intermediate hoops.

14) Metal floor plate if required:
    a) Specify fabrication from rolled-steel floor, rolled-stainless-steel floor, rolled-aluminum-alloy tread or abrasive-surface floor plate.
    b) Specify plate thickness.
    c) Specify angle supports.
    d) Specify flush bar drop handles for lifting removable sections, one at each end of each section.

15) Structural-steel door frames if required:
    a) Specify fabricate of structural-steel door frames from steel shapes fully welded together, with steel channel stops. Plug-weld built-up members and continuously weld-exposed joints. Reinforce frames and drill and tap as necessary to accept finish hardware. Specify integrally welded steel strap anchors for securing door frames into adjoining concrete or masonry.

16) Metal nosings, treads, and threshold as follows:
    a) Specify cast metal units as required.
    b) Specify extruded units as required.

17) Specify the following when necessary:
    a) Loose bearing and leveling plates.
    b) Loose steel lintels.
    c) Steel weld plates and angles.
    d) Metal bollards.
    e) Miscellaneous steel trims.

18) Steel and iron finishes:
   a) Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153 for steel and iron hardware and with ASTM A 123 for other steel and iron products.
   b) Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
   c) Shop prime with universal shop primer as required.

e. Execution of metal fabrication:
   1) General installation:
      a) Specify cutting, fitting, and placement such as: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
      b) Specify that exposed connections fit accurately together to form hairline joints. Specify weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Specify that surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections not welded, cut, or abraded.
      (I) Specify field welding requirements.

   2) Fastening to In-Place Construction: Specify anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.

f. Adjusting and cleaning:
   1) Touchup painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

   2) Procedure for galvanized surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

THE END OF DIVISION 05

DIVISION 06 WOOD, PLASTICS, AND COMPOSITES

06.1 General Requirements

This division identifies criteria for the design of Interior Architectural Woodwork in Nova Southeastern University and site with the purpose of establishing minimum standards to be used as the basis of design for Nova Southeastern University (NSU) Buildings at the Main Campus, Fort Lauderdale, Florida. This division also includes general requirements for rough carpentry.

Interior architectural woodwork must be designed to comply with the following objectives:

1. Sustainable Design and products under the criteria to meet LEED "silver" standards as a minimum.
2. Ease of maintenance.
3. Solutions with the best value considering a life cycle cost analysis.

These objectives are in line with the objectives of all Divisions and should be coordinated with requirements in Division 1 Section "SUSTAINABLE DESIGN REQUIREMENTS."

06.1.1 Submittals

Submittals shall include product data, samples, wood treatments, sustainability data, shop drawings, coordination drawings, and warranties.

06.1.2 Workmanship requirements

Comply with Architectural Woodwork Standards (AWS).

06.2 Codes and Standards

1. Florida Building Code (FBC).
2. Local codes, including Fort Lauderdale City Code.
3. Architectural Woodwork Standards (AWS)

06.3 Design Criteria

Rough Carpentry and Interior Architectural Woodwork covered under this section.

06.4 Specific Requirements (organized by CSI Master Format® 2013 Numbers & Titles)

06 10 00	Rough Carpentry
06 40 23	Interior Architectural Woodwork

06 10 00 Rough Carpentry

Design Standards

1. The Design professional shall design the woods, plastics and composites as follows:
   a. LEED "silver" submittals
   b. Fire retardant treated lumber and plywood for all interior rough carpentry.
   c. Preservative treatment lumber and plywood for exterior rough carpentry. Specify that treatment complies with AWPA U1.
   d. Wood products be produced from wood obtained from forests certified by an FSC-accredited body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship;" foreign species are not allowed.
      1) Where possible, products shall be obtained from Florida forests within a 500 mile radius.
      2) Wood products shall be by manufacturers and by vendors within the Florida region if possible.
   e. Fastening devices shall be fabricated from stainless steel.
   f. Countertops and backsplashes: solid surface / Corian or equivalent.
   g. Provide cove type backsplash all sides at wet uses.

06 40 23 Interior Architectural Woodwork

Design Standards

1. General:

   This section includes custom made cabinets/casework, wood paneling, wood railing, and wood trim. This section also includes guidelines for submittals to be requested from contractor.
   a. Refer to Division 12 for countertops requirements; in general countertops should be fabricated from solid surface or stone; and/or plastic laminate countertops as indicated.
   b. The use of wall hung shelving and closet shelving is not allowed on campus.
   c. Properly address emissions and limitations of volatile organic compounds (VOCs). Adhesives and composite wood products containing urea-formaldehyde are prohibited.
   d. No exposed surfaces for architectural woodwork or millwork shall remain unfinished. Design Professional shall pay special attention to this requirement.

2. Environmental Limitations:
   Casework/cabinets and other interior architectural woodwork shall not be delivered or installed until building is enclosed, and all wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

3 Wood products shall be produced from wood obtained from forests certified by an FSC-accredited body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and FSC STD-40-004, "FSC Standard for Chain of Custody Certification.
   a. Where possible, require that products be obtained from Florida forests. Foreign species are not allowed.

4. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of architectural wood cabinets, wood paneling, and transparent-finished wood doors that are required to have sequence-matched wood veneers.

5. Wood Species: For transparent finish wood, select from light colored wood and wood veneers such as Maple, Ash, Red Oak, and White Oak. Veneers must be FSC US certified. Foreign species are not allowed. Deviation from this list requires Nova Southeastern University approval.

STANDARD FINISHES FOR CABINETWORK

SPACE	CABINETWORK EXT. FINISH	CABINETWORK INT. FINISH INCL SHELVING	COUNTER TOPS
Classroom	Plastic Laminate	Plastic Laminate	Solid Surface
Science Lab/ Art Lab	Chemical Resistant Plastic Laminate	Plastic Laminate	Epoxy
Research Labs	Chemical Resistant Plastic Laminate	Plastic Laminate	Epoxy
Music Lab	Plastic Laminate	Plastic Laminate	Solid Surface
Storage	Plastic Laminate	Plastic Laminate	Solid Surface
Reception	Wood Veneer	Wood Veneer	Stone or Solid Surface
Staff Office	Wood Veneer or Plastic Laminate	Wood Veneer or Plastic Laminate	Solid Surface
Executive Offices/ Faculty Offices/ Conference	Wood Veneer	Wood Veneer	Stone or Solid Surface
File Storage/ Supplies	Plastic Laminate	Plastic Laminate	Solid Surface
Faculty Lounge/ Work Rooms/ Dining/Multi Purpose Rooms	Plastic Laminate	Plastic Laminate	Stone or Solid Surface
Living Areas	Plastic Laminate	Plastic Laminate	Solid Surface
Toilet Room	--------	--------	Solid Surface

NOTE: Unless specifically detailed and superseded by the Design Professional as indicated on the contract documents.

6. Architectural Woodwork Standards (AWS) quality grade to set standards on materials, construction and installation requirements, except as otherwise indicated below. Premium Grade for wood veneer finish casework and other transparent finish interior architectural woodwork. Custom Grade for plastic laminate finishes casework/cabinetwork and Interior Architectural Woodwork with plastic laminate or opaque (painted) finish. The following requirements must be included in specifications:
   a. Core: Medium density fiberboard core (MDF) or plywood core per AWS indicated quality grade standard. Particle board is not allowed.
   b. At shelving use hardwood veneer core. For casework/cabinet framings use pressure treated solid lumber.

c. Casework/cabinets shall be plant assembled. Where design, delivery or site conditions require, casework/cabinets may be assembled in component units with provisions made for field connecting. Field assembly and installation must be performed by fabricator.
d. Type of architectural cabinet construction: Use frameless construction; flush overlay style. Deviations from this require Nova Southeastern University approval.
e. Transparent finish wood casework/cabinetwork: Veneer species, cut, and grain direction must be approved by Nova Southeastern University.
   1) Interior of cabinets to have compatible species to that selected for exposed surfaces. Specify factory applied finish; AWS System 11, Premium grade catalyzed polyurethane finish is preferred, with satin sheen. For wood veneer casework, use same wood species cut and match; coordinate with wood paneling and other exposed wood trim so that veneer is provided by same wood veneers source.
f. Shelving inside casework/cabinetwork: Adjustable shelf support. Multiple holes to receive pins supporting adjustable shelves. Provide shelf adjustment on ½ inch centers, unless program calls for fixed shelving.
g. Indicate locks for each casework/cabinet drawer and door unless otherwise requested by Nova Southeastern University. Coordinate with Nova Southeastern University for locking and keying requirements.
h. Grommets: According to program requirements. Use plastic grommets.

7. Countertops: Refer to Division 12 of these standards.

8. Glass in casework/cabinetwork: Use 1/8 inch minimum tempered or laminated glass.

9. Wood trim shall be fabricated from solid lumber, except for trim items wider than available lumber, in which case use veneered construction. Comply with AWS premium grade for transparent finish trim; and AWS custom grade for plastic laminate finish or opaque finish trim. The use of opaque finish trim is discouraged. Factory finish required in all cases.

Product Standards:

1. Wood:
   Materials shall comply with requirements of the AWS quality standard for each type of woodwork and quality grade indicated.

2. Adhesive for interior architectural woodwork:
   Types recommended by AWS to suit application.

3. Plywood:
   a. Concealed plywood and plywood cores: Per AWS recommendations according to quality grade specified.
   b. Veneer core plywood shall be a non-telegraphic hardwood manufactured with exterior glue.

4. Plastic Laminate:
   Plastic laminate shall conform to NEMA LD3 for high-pressure laminate.
   a. Plastic laminate minimum material thickness shall be as follows:
      1) 0.048" – Exposed surfaces and edges of drawer fronts, door fronts, and all other remaining exposed exterior horizontal and vertical surfaces.

2) 0.028" – Exposed interior surfaces of door backs, cabinet sides, backs, other remaining exposed interior horizontal and vertical surfaces.
3) 0.028" – Shelving, tops, bottom and edges. Shelving core: Hardwood plywood, ¾ inch minimum. All surfaces of shelving to be covered with plastic laminate including four edges.

b. Colors: Selected from manufacturer's standard color selection. For special projects, consider selecting colors from the premium selection line. Semi-exposed and interior concealed surfaces shall be same color as exterior exposed surfaces of cabinetwork.
c. Texture: Suede finish, unless otherwise approved by Nova Southeastern University.
d. Approved manufacturers:
1) Abel Laminati, Inc., Formica Corp.
2) Panolam Ind.
3) WilsonArt International.

5. Chemical-resistant, high-pressure plastic laminate to conform to NEMA3, grade HGP, tested per test procedure 3.9.5.:
a. Thickness: 0.034 plus/minus 0.005 inch thick.
b. Texture: Matte, unless otherwise approved by Nova Southeastern University.
c. Approved manufacturers:
1) Formica Corp. Lab Grade 840 Block
2) Panolam Ind. Int'l Inc. Pionite Chemguard
3) WilsonArt Int'l Div. of Premark Int'l Inch. Chemsurf.

6. Cabinet Hardware: Minimum standards are included in BHMA A156.9; grade classification 1.
a. Approved manufacturers:
1) Hafele
2) KV
3) Stanley
4) Blum
5) Accuride
b Materials/Finish for exposed hardware: Stainless steel 630 finish.
c. Hinges:
Invisible/concealed reversible for Casework/Cabinetwork other than kitchen and Break Rooms Cabinetwork: Fabricated from stainless steel. Similar to SOSS #218; hinge size and quantity per hinge manufacturer's recommendations.
Invisible European type hinge for Cabinetwork in kitchen and Break Rooms: Heavy duty, institutional, similar to Blum Inc. Clip top 170 degree hinge. Consult with manufacturer as to which is the best hinge for application.
d. Door and drawer pulls: Solid aluminum or stainless steel wire pulls; 5/16 inch in diameter, 4 inches c. to c.
e. Drawer slides: Complying with BHMA A156.9, Grade 1HD-100 and Grade 1HD-200 side mounted; full extension type; zinc-plated-steel ball-bearing slides with detent in and positive stop features. Coordinate with Nova Southeastern University for special requirements. Approved manufacturer: KV and Accuride.
f. Shelf rests: BHMA A156.9, B04013; metal, two-pin type with shelf hold-down clip.
g. Cabinet drawer/door locks; Cam locks of type to match Nova Southeastern University campus standards and the following: BHMA A156.11, E07261 for doors and BHMA A156.11, E07051 for drawers.
h. Magnetic type catches, BHMA A56.9, #B03141 fabricated from aluminum.

i. Cable Covers/Grommets: fabricated from plastic. The color selection shall be made as per Nova Southeastern University's requirements for each project.

7. Wood Trim: Use wood trim at special function areas. The use of wood trim requires Nova Southeastern University approval. Comply with AWI Section 6.
   a. Wood trim be assembled, sanded and finish at shop. Architectural Woodwork Standards (AWS) premium grade quality standard. AWS custom grade quality when using opaque finish.

   b. Fire retardant treatment where required by code.

   c. Transparent finish trim: Wood species and cut as selected by Architect based on listed species; and, subject to Nova Southeastern University approval.

   d. Opaque finish trim: Select species from regional products if available.

8. Wood Paneling: Comply with AWI Section 8. Use wood veneer paneling at special function areas as approved by Nova Southeastern University.
   a. Call for AWS Premium grade quality standard.
   b. Call for fire retardant treatment where required by code.

Performance Standards

1. Coordination:
   Field measure and verification of all dimensions shall be performed prior to fabrication. Cabinetwork/Casework must be coordinated with countertops covered under division 12 of these standards.

2. Manufacturer / Installer Qualifications:
   Interior Architectural Woodwork shall be fabricated in Florida by certified participant in AWI Quality Certification Program and be listed as member of AWI .
   with then (10) years minimum experience in successfully producing and installing custom interior architectural woodwork including but not limited to casework/cabinet word trim and paneling of sizes and types similar to that indicated for this project, with sufficient production capacity to produce required units.

3. Product Data:
   Properly identified product data shall be requested, including specifications and catalog cuts for manufactured items, such as cabinet hardware, plastic laminate, wood finishes, and adhesives.

4. Samples:
   Properly identified samples of the following for selection and review shall be requested.
   a. Cabinet hardware.
   b. Each wood species that is to receive factory applied transparent finish, with finish applied on one side of sample.
   c. Veneer leaves representative of and selected from flitches to be used for transparent-finished cabinets. Include review of flitches to be used on wall paneling and wood doors when wood veneer matching is a requirement.
   d. Each wood species that is to receive factory applied opaque finish, with finish applied on one side of sample.

e. Plastic grommet color samples in manufacturer's full color range.

5. Mock-Up:
The Architect and/or Nova Southeastern University shall determine if full size erected assemblies are required for review of construction. A mock-up also may be used for assessing factory applied finishes.

6. Certificates:
   a. Submit certificates from wood treating plant or material supplier that all lumber, plywood, and resin tops supplied conforms to referenced specifications.
   b. Qualification data from manufacturer and/or installer. Include list of completed projects with project names, addresses, names of Architects, Contractors and Owner and their phone numbers and e-mails.
   c. Structural performance data signed and sealed by the design professional.

7. Pre-installation Conference:
Pre-installation conference at least two weeks prior to commencing work of this section shall be coordinated.

8. Installation: To comply with AWS.
   a. Transparent finish wood casework/cabinetwork: Premium Grade
   b. Transparent finish interior architectural woodwork, including trim and wood paneling: Premium Grade
   c. Plastic laminate casework/cabinetwork: Custom Grade
   d. Opaque finish interior architectural woodwork, including trim: Custom Grade
   e. Application of joint sealant between exposed cabinet surfaces and adjacent walls shall be included under the joint sealant section under Division 07.

END OF DIVISION 06.

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07.1 General Requirements

This chapter identifies criteria for the design of thermal and moisture protection systems in Nova Southeastern University buildings with the purpose of establishing minimum standards to be used as a basis of design for Nova Southeastern University (NSU) Buildings at the Main Campus, Fort Lauderdale, Florida. NSU experiences with various materials, products and installations have led to the procedures and practices noted under this Division 07. The thermal and moisture protection systems/products provided under this division must be selected to provide weather tight and thermally efficient building envelope work environment for the occupants in a sustainable and reliable design.

The thermal and moisture protection system products must be designed to comply with the following objectives:

1. Sustainable Design and products under the criteria to meet LEED “silver” standards as a minimum to reduce the total building energy consumption.
2. Reflectivity for energy conservation.
3. Longevity.
4. Weather tight and watertight building envelope. Hurricane and puncture resistance and the ability to comply high velocity wind zone (HVWZ) requirements.
5. Users comfort.
6. Easy of maintenance.
7. Compatibility with all adjacent materials both new and existing.
8. Solutions with the best value considering a life cycle cost analysis to account for total project cost.

These objectives are in line with the objectives of all Divisions and should be coordinated with requirements in Division 1 Section “SUSTAINABLE DESIGN REQUIREMENTS.”

07.1.1 Submittals

Submittals shall include product data, sustainability data, State of Florida and/or Miami-Dade County product approvals (NOA) shop drawings, samples and coordinated shop drawings and guarantees including all related scope disciplines. Prior to the issuance for procurement or contract negotiations the contract thermal and moisture specifications, sections, drawings shall be submitted to NSU for review and approval prior to commencement. All thermal and moisture related submittals; product submittals and shop drawings from the Contractor shall also be reviewed and approved by NS prior to acceptance by the Design Professional. ASCE-7 component and cladding wind velocity pressures calculations signed and sealed by a State of Florida Structural Engineer establishing wind pressures as per ASCE-7.

07.1.2 Workmanship Requirements

Refer to specific requirements under each section included herein.

07.2 Codes and Standards

Thermal and moisture protection systems/ products shall comply with the requirements of the applicable authorities having jurisdiction including but not limited to the following:

1. Florida Building Code (FBC)
2. Local codes, including Fort Lauderdale City Code.
3. State of Florida and/or Miami-Dade County Product Approval (NOA).
4. Florida Building Code – Roofing Application Standards (RAS) and Testing Application Standards (TAS).
5. National Roofing Contractors Roofing and Waterproofing Manual (NRCA).
6. American Society of Civil Engineers (ASCE-7) Building Component and Cladding Calculations.
7. United Laboratories (UL) Standards.
8. ASTM Standards.
9. Factory Mutual requirements for a Class I rated assembly.
10. Energy Star materials and components for materials and evaluation by the Design Professionals.
11. Standards included under each section.

07.3 Design Criteria

The Design professional shall specify the thermal and moisture protection products covered under this section.

07.4 Specific requirements (organized by CSI Master Format® 2013 Numbers & Titles)

07 01 50.19	Preparation for Reroofing
07 11 13	Bituminous Damproofing
07 13 26	Self-Adhering Sheet Waterproofing
07 14 13	Hot Fluid Applied Rubberized Asphalt Waterproofing
07 14 16	Cold Fluid Applied Waterproofing

07 18 00	Traffic Coatings
07 21 00	Thermal Insulation
07 52 16	Styrene-Butadiene-Styrene (SBS) Modified Bitumen Mineral Surfaced Cap Sheet Membrane Roofing
07 54 16	Ethylene Interpolymer (KEE) Roofing
07 54 19	Polyvinyl-Chloride (PVC) Roofing
07 62 00	Sheet Metal Flashing and Trim
07 71 00	Roof Specialties
07 71 29	Manufactured Roof Expansion Joints
07 72 00	Roof Accessories
07 81 00	Applied Fireproofing
07 84 13	Penetration Firestopping
07 84 46	Fire Resistive Joint Systems
07 92 00	Joint Sealants
07 95 00	Expansion Control

07 01 50.19 Preparation for Re-Roofing

Design Standards

1. The intent of these standards is to provide general guidelines on the design and provision for re-roofing of existing building. These standards shall not supersede code and regulations nor relieve the Architects from their professional responsibility.

2. LEED "silver submittals:

   a. Product Test Reports for Credit SS 7.2: For roof materials, documentation indicating that roof materials complies with Solar Reflectance Index requirement.
   b. Product Data for Credit IEQ 4.1: For adhesives and sealants used inside the weatherproofing system, documentation including printed statement of VOC content.
   c. Laboratory Test Reports for Credit IEQ 4.1: For adhesives and sealants used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

3. Unless otherwise required by Nova Southeastern University existing roofing system scheduled to be replaced must be completely removed, including insulation, down to the structural substrate.

4. Limit roofing materials to one roof system at each facility. Use of an additional roofing system shall require NSU approval on a per condition basis.

5. Comply with local and state building code provisions.

6. If reroofing work is being performed either above or adjacent to an existing roof not requiring replacement, specify protection requirements for the existing roof to remain. If the existing roof is determined to currently be under warranty coverage, contact the warrantor to determine if it has

protection recommendations and requirements during the roof scope assessment phase and if roofing system needs to be inspected after the construction of adjacent new roofing has been completed.

7. Install access ladders at roof-to-roof transitions exceeding 24" inches in height.

8. All roof penetrations (i.e. roof drains, vent through roofs, electrical conduits, lightning protection conduits, mechanical equipment curbs and supports, roof hatches ete.) shall be located no less than 16" away from each other penetrations, parapet walls, roof edges and roof mounted equipment and curbs.

9. Ponding, for any period longer than 48 hours on any roof surface, is not allowed.

10. Products containing hazardous materials such as asbestos, lead paint or other identified Haz-mat materials are not allowed.

11. It is recommended that an experienced, qualified professional roof consultant be hired to evaluate the existing conditions of the roof system and to provide written recommendations for re-roofing procedures and roofing products. The evaluation should contain and include but not be limited to:

    a. Roof assembly system components to determine materials, thickness and moisture contents.
    b. Structural Assessment of the structural integrity of the deck.
    c. Fastener Pull-out values.
    d. Investigation of existing primary and secondary drainage capacity and calculations.
    e. ASCE-7 component and cladding wind pressure calculations
    f. Impact and changes as a result of current building code requirements.
    g. Investigation and testing for the presence of asbestos-containing roofing materials or other hazardous materials.
    h. Access condition of Sheet metal flashing to determine if existing sheet metal flashing can be reused and if it complies with Florida Building Code High Velocity Hurricane Zones Requirements.

12. At all existing still under guarantee roof systems or assembly that indicate signs of premature failure or reduced service life. The consultant shall perform forensic testing as needed to determine reasons from failure. Determine if areas other than the roof is attributable to the causes of leakage, including but not limited to building envelop, exterior wall finishes, sealant failure at windows and other openings. Recommendations shall be submitted in writing to include if roof repairs or remedial scope will be suffice or if a new roof system is necessary to avoid further leakage.

Product Standards

Specify only products and systems allowed by Nova Southeastern University in the Criteria Manual of Design and Specifications Standards for Design Professionals.

Performance Standards-Minimum

1. General: Requirement to be included in specifications:
    a. Re-roofing Conference
    b. Compliance with governing EPA notification regulations before beginning membrane roofing removal.

c. Compliance with hauling and disposal regulations of authorities having jurisdiction.
d. Compliance with FM Global Loss Prevention Data is required, specifically those related to re-roofing on FM insured building only and only when approved.

2. Request that removal of portions of existing roofing system scheduled be removed. Shall be replaced with the new system and made watertight that same day. In some special cases due to specific job conditions an installation of temporary roof membrane(s) may be required; in such cases the Roofing Contractor together with roofing manufacturer should submit a temporary roofing membrane report to Nova Southeastern University for review; the report shall include recommendations from roofing manufacturer as to whether temporary roofing should remain in place. All temporary roofing when used shall to local building code requirement.

3. Consider in the design the upgrading roofing insulation R-value whenever possible and NSU budgets permitting. Contact Florida Power and Light (FPL) to verify if scope qualifies for the roofing insulation rebate program. Verify that the increased insulation will not affect the roofing system fire performance and/or roofing heights in reference to drains, parapet walls and other roof edge/termination conditions.

4. Request inspection of deck after removing existing roof system down to deck. Request inspection of wood nailers to verify that they are in good condition and that nailer's attachment meets current wind-uplift loads. Require that wood nailers be replaced with new pressure treated wood nailers if conditions listed above are not met.

5. Request inspection of existing roof penetrations and drains; Roofing consultant to be present during these inspections. Seek advice from roofing consultant as to raising equipment on roof that is too low for proper flashing.

6. Request water testing of existing roof drains during each stage of reroofing, and roof drain plugging and plug removal requirements.

07 10 13 Bituminous Damproofing,
07 13 26 Self-Adhering Sheet Waterproofing,
07 14 13 Hot Fluid Applied Rubberized Asphalt Waterproofing
07 14 16 Cold Fluid Applied Waterproofing

Design Standards

The intent of these standards is to provide general guidelines on the design and provisions for building damp proofing waterproofing systems. These standards shall not supersede code and regulations nor relieve the Design professional from their professional responsibility.

The Design Professional shall specify the damp proofing covered in this section.

1. Select all waterproofing products that have Miami-Dade Product Approval (NOA) approvals or State of Florida Product Approvals.

2. Comply with applicable building codes.

3. On complex Projects hiring an independent waterproofing consultant will be required.

4. Where the term "Manufacturer Technical Representative" is used, the term means an employee of the manufacturer who is trained and licensed by manufacturer to provide technical advice to architect on material, systems and installation methods; and to provide field observations. Manufacturer Technical Representative is not the product installer.

5. Installers must be authorized, certified, or licensed by the waterproofing manufacturer.

6. As follows are the standards for damp proofing, waterproofing systems and water repellent systems, including:
   a. Bituminous damp proofing.
   b. Self Adhering Sheet Waterproofing.
   c. Hot and Cold Fluid Applied Waterproofing.
   d. Water repellents coatings.

7. Bituminous damp proofing:
   a. Damp proofing treatments are intended to resist the passage of water if no hydrostatic pressure is present.
   b. Use bituminous damp proofing on exterior cavity walls. Select bituminous damp proofing with a maximum VOC content of 100 g/L.
   c. Recommended Type: Cold Applied Emulsified Asphalt Damp proofing. Other types of damp proofing may be required to meet condition requirements. Consult with waterproofing consultant and system manufacturers' best suited system for site conditions and building components.

8. Waterproofing Systems:
   a. Self adhering sheet waterproofing and hot or cold fluid applied waterproofing require surface preparation, moisture testing, and priming.
   b. Listed systems are for concealed application and require protection board.
   c. Use of self adhering sheet waterproofing is required in vertical below grade areas, including but not limited to elevator pit walls. Seek assistance from waterproofing manufacturer to determine if selected waterproofing is suitable to site conditions.
   d. In other areas, Architect should determine, based on specific conditions and recommendations from waterproofing expert/consultant, which waterproofing, whether self-adhering sheet, hot or cold or fluid applied, will perform best.
      1) VOC content for self adhering sheet waterproofing membrane: 0 g/L. Maximum VOC content of system primer and sealer: 200 g/L
      2) Maximum VOC content for cold fluid applied waterproofing system: 220 g/L.
      3) Maximum VOC content for hot fluid applied waterproofing system: 220 g/L
   e. For exposed waterproofing system, use system best suited for application and exposure. Refer to Traffic Coating Section included in this section of standards.

9. Water repellent systems:
   a. Use clear, penetrating water repellent sealer, either silane or siloxane system. Choose best system suitable for surfaces indicated to receive water repellent coating. Select water repellent with a maximum VOC content of 600 g/L.

Product Standards

1. Damp proofing: Cold applied cut back asphalt damp proofing, complying with ASTM D1227 for trowel, brush or spray application:
   a. Manufacturers:
      (1) BASF Construction Chemicals.
      (2) Euclid Chemical Company (The); an RPM company.
      (3) Karnak Corporation.
      (4) Koppers Inc.

2. Self Adhering Composite Sheet Waterproofing (Peel and Stick Membrane):
   a. Acceptable Manufacturers and Products:
      (1) W.R. Grace and Co.
      (2) CETCO Building Materials Group
      (3) Carlisle Coatings & Waterproofing Inc.

3. Sheet Thickness: 60 mils minimum.

4. Protection board: As recommended by manufacturer of sheet membrane.

5. Surface Mounted Reglets: Fabricated from stainless steel of design per manufacturer's recommendations.

6. Bonded High Density Polyethylene (HDPE) Sheet for Horizontal Applications on the "blind side" or inaccessible side of a cast in place concrete slab before concrete is poured, such as application under elevator pit slabs: 46 mils thickness.
   a. Manufacturers and Products:
      (1) W.R. Grace and Co. "Preprufe."

7. Cold Fluid Applied Waterproofing:
   a. One component moisture curing or two-component urethane type waterproofing suitable for covered non-traffic locations.
   b. Acceptable Manufacturers and Products:
      (1) Carlisle Coatings and Waterproofing, Inc. "Miraseal" CCW 5413.
      (2) Tremco, Inc.: Tremproof 201/60 or Tremproof 250GC.

8. Hot Fluid Applied Waterproofing:
   a. Single component 100% solid, hot fluid applied rubberized asphalt waterproofing system for covered horizontal areas.
   b. Manufacturers and Products:
      (1) Carlisle Coatings and Waterproofing, Inc. CCW 500R.
      (2) American Hydrotech, Inc., Monolithic Membrane 6125 and 5413.

9. Water Repellents:
   a. Clear water repellent coating for horizontal surfaces of concrete, masonry and precast concrete: Penetrating, silane 40% solid water repellent coating.
   b. Manufacturers:
      (1) Degusa.
      (2) Textured Coatings of America, Inc.

c. Clear water repellent coating for vertical surfaces of concrete, masonry and precast concrete: Penetrating, silane 20% solid or siloxane water repellent coating.
d. Acceptable manufacturers.
   (1) Degusa
   (2) Textured Coatings of America, Inc.
   (3) Tnemec Chemprobe Corp.
   (4) Pecora.

Performance Standards-Minimum

1. Manufacturer / Applicator/Installer Qualifications: The Design Professional shall require:
   a. An affidavit from the manufacturer approving applicator prior to installation.
   b. Applicator shall have a minimum five years documented experience installing specified systems and shall have successfully completed at least five projects of similar size and complexity.

2. Contractor Submittal requirements:
   a. Properly identified product data, including performance data.
   b. Shop drawings for waterproofing system, indicating terminations, overlapping with different waterproofing or other substrates, sheet metal flashing, coordination with other trades, prepared by system manufacturer.
   c. LEED Certificates.
   d. Miami-Dade NOA or Florida Building Code Product Approval (NOA).
   e. Maintenance manuals.
   f. Copy of Warranty.
   g. Mockup sample for Water Repellent

3. Field Testing for all waterproofing and water repellent systems.

4. Compatibility and Conditions:
   a. Specifications to include the following requirements:
      (1) Waterproofing manufacturer's technical representative shall inspect and approve surfaces to receive waterproofing prior to start of the work.
      (2) Waterproofing manufacturer's technical representative shall periodically inspect the work; and shall be present and observe field testing at completion of installation.
   b. Waterproofing manufacturer's technical representative shall report unsatisfactory surfaces to receive waterproofing and unsatisfactory materials and workmanship to Contractor, Design Professional, and NSU Project manager.

Field Quality Control

1. Include the following minimum requirements in specifications
   a. Manufacturer's technical representative shall be onsite prior to application, during first stages of application, and at intervals required to ensure that preparations are adequate and that material is being applied according to manufacturer's written recommendations and Contract requirements.
   b. Testing: In presence of waterproofing system manufacturer's technical representative, Design professional and Nova Southeastern University Project Manager, flood test each deck area, according to recommendations in ASTM D 5957 at vertical waterproofed areas, used testing methods in accordance to manufacturer's written recommendations. Perform testing after completing waterproofing but before overlying construction is

placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.

c. Manufacturer's material and labor warranty may require independent testing agency. Review warranty language and include following requirement when applicable:

d. Owner will engage independent testing agency to observe flood testing and examine underside of decks and terminations for evidence of leaks during flood testing.

Warranty

1. A minimum of five (5) year product warranty should be required.
2. Verify with product/system manufacturer available warranties.
3. Verify if manufacturer/installer warranties are available.

07 18 00 Traffic Coatings

Design Standards

1. These guidelines describe the minimum physical requirements for traffic coatings.

2. When desiring greater control, the Design Professional must determine if the specific project conditions require additional physical properties. Requirements may include minimum tensile strength, hardness, permeability, hydrolytic stability, water absorption, intercoat adhesion, and tear resistance.

3. Minimum recommendations for traffic coatings include the following:
   a. Moisture in concrete adversely affects coating adhesion. Request that manufacturer's recommendations must be followed regarding preparation and application.
   b. Lightweight insulating aggregate concrete is always an unsuitable substrate.
   c. Directly applying traffic coatings to untopped structural precast concrete decks is not recommended.
   d. Durability: The service life of traffic coatings varies from 5 to 7 years. The service life is affected by many variables including quality of the substrate, type of deck, workmanship quality, traffic loading severity, and degree of exposure of the traffic coatings to the ultra violet ray's sun and the weather. The Design Professional must consider the above variables as they applied to the specific project conditions for the selection of the appropriate product.
   e. VOC content for Traffic Deck Coatings: 100 g/L or less.

Product Standards

1. Acceptable Manufacturers
   a. Deck Waterproofing for Exterior and Interior Pedestrian Traffic; and Equipment Room Floors:
      (1) Tremco
      (2) Neogard
      (3) Carlisle Coatings and Waterproofing Systems
   b. Deck Waterproofing for Vehicular Traffic:
      (1) Tremco
      (2) Neogard
      (3) Carlisle Coatings and Waterproofing Systems.

Performance Standards

1. Design Professional to request the following submittals:
   a. Product Data. Include VOC data.
   b. Shop Drawings showing extend of each type of traffic coating and termination points. Including termination details
   c. Color Samples.
   d. Copy of Warranty.
   e. Letter from manufacturer approving applicator.
   f. Maintenance Manual.
   g. Proposal on maintenance service.
   h. Mockup sample.

2. Manufacturer / Applicator Qualifications:
   a. Applicator shall have a minimum of five ten years of experience installing specified system and shall have successfully completed at least five projects of similar size and complexity.

3. Warranty: Upon completion and acceptance of the work, an executed copy of joint warranty shall be submitted and signed by the manufacturer and contractor agreeing during a five year period to replace defective work and/or material without additional cost to the Owner. Warranty shall also cover removal and replacement of overburden.

4. Total dry thickness for pedestrian traffic coating: 40 mils minimum. Total dry thickness for vehicular traffic coating: 63 mils, except at areas of heavy traffic dry thickness to be 93 mils.

5. Request membrane to be carried up vertically a minimum of 4 inches. Request that a flood test be performed after installation. Manufacturer of system to be present during flood test.

Field Quality Control

1. Manufacturer's field service: The Design Professional shall request the services of a manufacturer's technical representative to inspect the preparation and application of materials. The manufacturer's technical representative must visit the site before the installation, one visit during installation, and one visit after completion.

2. Request water tightness verification of a traffic coating above an occupied space by field testing for leaks Use methods recommended in writing by manufacturer. When there are no manufacturers recommendations available, include requirement for the following test.

3. Flood Testing; when this method is not feasible, use the Electronic leak detection method as a minimum

4. Testing to be performed by an independent qualified testing laboratory paid by Owner.

07 21 00 Thermal Insulation

Design Standards

1. The intent of these standards is to provide general guideless on the design and provision for thermal insulation. These standards shall not supersede code and regulations nor relieve the Design Professional for their professional responsibility. Roof insulation should not be included in this section. Sound Insulation should not be included in this section.

2. Do not indicate thickness of insulation; indicate required thermal resistivity (R) value in specifications. Required R values should be determined by the mechanical engineer and energy modeling program as required by FBC.

3. Selection of insulation should be preceded by a careful analysis of applicable building codes and building regulations, including but not limited to combustion, flame spread, and smoke development.

4. Where insulation in faced on one side of board, the location of vapor retardant facing should be determined by the mechanical engineer.

Product Standards

1. Select products that have recycled content.

2. Request during submittal process documentation indicating percentages by weight of postconsumer and pre-consumer recycled content as required by LEED Credit MR4.

3. Manufacturers of Thermal Insulation Boards:
   a. Boards
      (1) Polyisocyanurate insulation, foil faced on both sides of board with no HCFC blowing agents. Use the long term thermal-resistance (LTTR) method for determining and reporting. R-values. Maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.
         (a) Manufacturers:
            Dow Chemical Thermax Sheathing
            Atlas
            R-max
      (2) Glass Fiber Board Insulation, foil faced on one side of board, with low emitting formaldehyde (less than 0,05-ppm) as approved by the Greenguard Environmental Institute. Select density best suited to conditions. Board insulation is available in several densities. Select board with higher density at exposed locations. Maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84 At locations, such as mechanical rooms, where insulation will not be covered by other building materials, consider using wire mesh or similar material to protect insulation from damage.
         (a) Approved Manufacturers:
            Owens Corning
            John Manville
            Knauf Insulation

(3) Extruded-Polystyrene Board Insulation for application between slabs: 60 psi compressive strength Maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.
(4) Basement Wall Insulation Drainage Panels: Extruded-polystyrene board insulation Drainage Panels for application at exterior face of basement walls: 25 psi compressive strength.

b. Blankets:
(1) Foil-Faced, Glass-Fiber Blanket Insulation. Maximum flame-spread and smoke-developed indexes of 75 and 150, respectively, per ASTM E 84.
(a) Approved Manufacturers:
Owens Corning
John Manville
Knauf Insulation
(2) Foil-Faced Mineral Wool Blanket Insulation: Maximum flame-spread and smoke developed indexes of 25 and 0, respectively per ASTM E84.
(a) Approved Manufacturer:
Thermafiber FS-25.

c. Insulation Fasteners and Adhesives:
Specify insulation fasteners and adhesives recommended in writing by manufacturer and as required to suit conditions.

Performance Standards-Minimum

1. Requirements to be included in specifications
a. Surface burning characteristics of insulation per ASTM E84
b. Combustion Characteristics of insulation per ASTM E 136.
c. LEED data concerning recyclable content.
d. Compliance with required r values, applicable building code and energy program.

2. Where insulation is shown installed between framing members, coordinate thickness of insulation with depth and spacing of metal studs, metal furring, or other supports.

3. Insulation vapor barrier (foil facing) should face warm side of building in accordance with mechanical engineer and insulation manufacturer's recommendations.

4. Install wire mesh or similar means over exposed insulation to protect from damage as recommended by insulation manufacturer.

Roofing (Low Sloped Roofs Not Exceeding 2-1/2:12).
07 52 16 Heat Weld Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing-Heat Welded
07 54 16 Ethylene Interpolymer (KEE) Roofing
07 54 19 Polyvinyl Chloride (PVC) Roofing

1. General: Nova Southeastern University experiences with various materials and installations have led to the procedures and practices noted in this Division with an emphasis the no hot kettles be used on the Nova Southeastern University facility. Nova Southeastern University is striving to standardize roofing systems whenever possible per facility and per campus. In consequence, roofing materials shall be limited to one roof system for each facility. Use of an additional

roofing system will require Nova Southeastern University for review, consideration and possible approval prior to designing or installation.

2. The Design Professional shall use the following criteria as minimum requirements for the low slope roof systems. The low slope roof design shall include a 20 year, no dollar limit (NDL) manufacturer guarantee;

3. Heat Weld, Styrene-Butadiene-Styrene (SBS) fiberglass or polyester reinforced mineral surfaced cap sheet modified bituminous membrane roofing (base ply + 2-interply and 1 cap sheet) with a minimum 2-ply Styrene Butadiene Styrene (SBS) Modified Bitumen Mineral Surfaced roofing base flashings membranes specification. The Styrene-Butadiene-Styrene (SBS) modified bituminous membrane roofing shall be the Standard Basis-of-Design with GAF Materials Corporation, Inc. as the preferred manufacturer; all other equivalent brands will require review and approval by Nova Southeastern University Facilities Design and Construction Department.

4. Ethylene Interpolymer (KEE) roofing system is also an approved and authorized system by Nova Southeastern University for use. The low slope roof design shall include a 20 year, no dollar limit (NDL) manufacturer guarantee; installed in the preferred fully-adhered configuration or mechanically attached after review, evaluation and approval by NSU. Basis of Design with Siemens as the preferred manufacturer, all other equivalent brands will require review and approval by Nova Southeastern University Facilities Design and Construction Department. Thermo-plastic membrane systems shall not be used at areas that are exposed to vandalism, traffic of corrosive atmospheres.

5. Polyvinyl-Chloride (PVC) Roofing system is also an approved and authorized system by Nova Southeastern University for use. The low slope roof design shall include a 20 year, no dollar limit (NDL) manufacturer guarantee; installed in the preferred fully-adhered configuration or mechanically attached after review, evaluation and approval by NSU. Basis of Design with Sika Sarnafil as the preferred manufacturer, all other equivalent brands will require review and approval by Nova Southeastern University Facilities Design and Construction Department. Thermo-plastic membrane systems shall not be used at areas that are exposed to vandalism, traffic of corrosive atmospheres.

    a. Roof systems designs shall comply with the following:
        (1) Florida Building Code (FBC), including FBC - Roofing Application Standards (RAS), and FBC - Test Application Standards (TAS).
            (a) The entire roofing assembly shall be tested to comply with the missile impact requirements of SSTD 12-99.
        (2) Miami-Dade County Product Control (NOA) or State of Florida product Approval (NOA) methodology.
        (3) Underwriters Laboratories UL-790 and ASTM E-108 requirements for Class "A" fire rating for roof coverings.
        (4) American Society of Civil Engineers (ASCE) 7.
        (5) Uplift requirements based on the basic wind velocity pressures for the project according to the following:
            (a) Provide calculations, signed and sealed by a Florida registered professional engineer, establishing wind velocity pressure values for the specific project according to ASCE 7.
            (b) Use ASCE 7 Exposure Category "C" for wind design at Nova Southeastern University additions and new construction.
        (6) Roofing project specific manufacturer's specifications.

c. Limit roofing materials to one roofing system and one manufacturer at a facility when possible. Use of an additional roofing system requires Nova Southeastern University (NSU) approval on a per condition basis.

d. Different roofing systems shall be separated by a parapet, change of elevations, or any other means of termination to define warranty/liability limits and maintenance concerns.

e. Provide proper disposal of rainwater watershed from roofs by the use of primary and secondary drainage scuppers, working, overflow scuppers, gutters, and downspouts complying with FBC - Plumbing requirements.
   (1) Ponding is not allowed.

f. Products containing asbestos are not allowed.

g. Design and locate traffic pads from roof scuttles and access doors to roof mounted equipment requiring maintenance or repair. Provide a fully adhered nonskid surface of a suitable Nova Southeastern University accepted product with a different color than the roof deck.

h. See Division 05 and FBC - Roof Assemblies and Rooftop Structures for equipment framing support requirements.

i. Membrane lap seams shall be positioned to expel or shed water. No water laps are allowed.

j. Specify the Roofing Subcontractor, at project completion, to furnish roofing material to Nova Southeastern University-Facilities Maintenance Department for 100 square feet of replacement roof for each type of system installed.

k. Provide secure anchorage with continuous cleats and fastenings at edge drip and parapet coping flashing conditions according to the most stringent applicable code requirements.

l. Parapets.
   (1) Limit parapet heights so parapet wall flashing felt shall not exceed a height of 24 inches above the finished roof deck.
      (a) Roof membrane flashing shall cover the interior face of the parapet, wrap wood nailers secured to the top of the parapet, and be covered by a metal coping cap of stainless steel or aluminum and cleats as required by FBC requirements. All coping caps shall be constructed of stainless steel or kynar finished aluminum.
      (b) Use roofing systems manufacturer's recommendations for primer at all required areas for roof membrane applications areas.
      (c) Coping shall have outer hold-down cleats and be face fastened at inward facing parapet components with removable neoprene grommet type fasteners.
      (d) Slope top of parapets, nailers, and copings 1 inch per foot down to interior face.
      (e) Provide termination bars at the upper felt flashing vertical edge according to RAS 111 where required.

(2) Existing parapet walls over 24 inches shall have roof membrane flashing between 8 to 24 inches in height above the finished roof deck and supplemental flashing or waterproofing/felt installation beginning from new metal counter flashing with a flat profile flange and cover the interior face of the parapet, wrap wood nailers secured to the top of the parapet, and be covered by a metal coping cap.
   (a) Seal membrane flashing according to manufacturer's requirements and membrane system used.
   (b) Provide term bars at the upper felt flashing vertical edge according to RAS 111.

(3) Parapets at precast and tilt wall construction shall comply with required parapet flashing and the following.
   (a) Tilt wall panel joint sealant if used shall be in place before parapet wall flashing or waterproofing/felt installation.
   (b) For existing parapet walls over 24 inches in height, use roofing sealants compatible with the tilt wall sealants for closure at the tilt wall joints and counter flashing flange before waterproofing/felt installation.
   (c) Provide wood nailers and coping between panel joints and allow for expansion/contraction.
   (d) Slope top of precast parapets 1 inch per foot down to interior face.

(4) Provide 24 inch high maximum roof membrane flashing when flashing is required at adjacent building walls.
   (a) Waterproofing is required for remaining vertical stucco or precast surfaces. .

(5). No roof system shall be directly to a concrete deck.

(6) A concrete primer and a vented base ply or insulation over interior or exterior spaces shall be included in the manufacturer's systems and (ASCE) 7.

(7) Cellular insulating concrete roof decks when specified shall receive a nailed vented base sheet.

(8) Provide metal roof vents, according to roofing system manufacturers Recommendations, on cellular insulating concrete roof decks at a rate of 1 vent per 900 square feet for any roofing membrane or as approved by the roofing system manufacturer.

m. Vegetated Green Roof Assemblies Standards requires approval by Nova Southeastern University prior to use.

n. Trafficable roofing for roof top activities requires approval by Nova Southeastern University.

o. Provide substrate waterproofing at all roof / terrace tile applications.

2. Low Slope Roofing (Low Sloped Roofs Not Exceeding 2-1/2:12).

a. Low Slope Roofing at new construction shall be heat weld SBS modified bitumen fiberglass or polyester reinforced membranes of the granular mineral surfaced cap sheet over two modified polyester reinforced smooth surface inner ply all plies heat welded.. A base sheet shall be included if required by substrate and manufacturer's recommendations.
   (1) Roof slopes shall not exceed 2-1/2:12. Verify Class "A" fire rating for proposed slope and comply with FBC

(2) Comply with FBC, and roofing manufacturer's specifications. SBS roof slopes minimum ¼" per foot, including crickets, which shall be at least 1/2" per foot.

b. Slopes at re-roofing solutions minimum at 1/8" per foot of SBS or single-ply materials, including crickets, shall be at least 1/4" per foot to existing drains or scuppers. Ponding shall be corrected according to FBC High Velocity Hurricane Zones – Re-Roofing Considerations.

c. Thermo-plastic Single-Ply membranes fully adhered with heat welded seams and over proper substrates can be used at reroofing projects with structural dead load concern and weight limitations concerns and written acceptance from Nova Southeastern University Facilities Design and Construction Department.

d. Thermo-plastic Single-Ply membrane roof slopes, including crickets, shall be 1/4" per foot for new construction and 1/8" per foot on re-roofing applications.

e. When both SBS modified bituminous membrane and single ply roofing systems are present on a facilities such is where new construction abuts an existing building. Separate systems with a curb, expansion joint or other means of terminations to define warranty/liability limits and maintenance concerns.

g. Membranes with rubberized composition or membranes applied with hot asphalt are not accepted or allowed by Nova Southeastern University.

h. Repair membrane for fleece backed membrane systems when used shall be without fleece backing.

i. Substantially completed roof systems shall be turned over to Nova Southeastern University clean and free of any construction debris and stains. Roof membrane patches or repairs shall not exceed 9 sq. ft. per every 100 sq. ft. area or the entire roof membrane system and insulation will be removed and re-roofed.

j. Base sheets are required for the following conditions:
(1) At cellular insulating concrete roof decks and other nailable substrates, provided a mechanically attached channel vented base sheet is specified.

k. At all use of granular mineral surfaced cap sheets, provide additional matching granules to cover any exposed heat weld "bleed-out".

l. An SBS mineral surfaced cap sheet used with other than a mineral granule topping as the as the last finished cap sheet requires prior acceptance by Nova Southeastern University on a per condition basis.

07 62 00 Sheet Metal Flashing and Trim
07 71 00 Roof Specialties

1. Comply with RAS 111 and FBC High Velocity Wind Zones - Weather Protection and Materials.

2. Flash sheet metal for new and existing roofs shall comply with FBC RAS and TAS Standards-Perimeter Flashing.

3. PVC/Teflon for single-ply membrane roof systems shall be specified with the membrane roof specification when used in compliance with FBC requirements.

4. Flashing metal shall comply with SMACNA, latest standards:
   a. New and re-roofing installations: Type 302 or 304 – 20 gage, 22 gage and 24 gage stainless steel or aluminum with kynar finished

   b. Historical buildings: Type 302 or 304 – 20 gage, 22 gage and 24 gage stainless steel or metal to match existing as accepted by Nova Southeastern University on a per condition basis.

5. Flashing shall have an 8 inch minimum vertical height above finished roof system surface and be at roof openings, parapet walls, curbs, mechanical equipment, and any other surfaces intersecting the roof plane. Except at curbs and other roof mounted items designed to receive 8 inch high flashing, extend other surfaces intersecting the roof plane at least 14 inches from the finished roof membrane. Coordinate with Divisions 15 and 16,

6. Gutters and Downspouts:
   a. Comply with RAS 111 and FBC High Velocity Hurricane Zones - Weather Protection.
   b. Provide downspouts for rainwater disposal from roofs.
   c. Provide gutters and downspouts at edge of roof perimeters when needed. Built-in gutters behind parapets and parapet top gutters are not allowed.
   d. Gutters, downspouts, scuppers, and conductor heads shall be stainless steel. Comply with SMACNA - Architectural Sheet Metal Manual, latest edition.
   e. Downspouts within 9 feet of finish grade or a slab shall be ductile iron or Schedule 80 PVC. Coordinate connections to stainless steel components.
   f. At all tilt-wall construction, scuppers and downspouts when used shall be offset a minimum of 12 inches from any tilt-wall panel joint.
   g. Connect downspouts to storm drain systems and shall contain a clean-out at 18” above grade level. Collector heads if used shall have provisions for overflow capacity-apportion at the top of the collector shall be lower than the top of the scupper draining into it, or an overflow relief opening shall be provided in the collector head near it top, so that water draining off the roof would spill off of or out of the collector, and not be able to back up into the scupper and roof surfaces under instances of heavy precipitation.
   h. Downspouts shall be connected to a drainage system. Downspouts discharging on grade require Nova Southeastern University acceptance on a per condition basis. At ground surface, use poured in place concrete pads, not precast splash blocks.
   i. Paint downspouts to match adjacent wall color.
   j. Solder lap joints. Sealant at joints is not allowed. Provide expansion joints for thermal expansion and contraction.
   k. Provide strap reinforcement with hemmed edges and no sharp edges.

07 71 29 Roof Expansion Joints
07 72 00 Roof Accessories

1. Roof Expansion Joints.

   a. Comply with FBC High Velocity Wind Zones - Roof Coverings with Slopes less than 2:12.

b. Allow for expansion and contraction to minimize cracking and deterioration of building component materials and roofing membrane and systems.
c. Design and locate flexible, weather tight, and durable expansion joints to allow for movement and to relieve stresses.
d. Roof expansion joints shall be compatible and according to the roofing manufacturer's specifications and recommendations.
e. Expansion joints shall be high profile.

2. Roof Scuttles.

a. At new facilities, provide safe and secured access by scuttles or access doors to each flat roof if the roof deck or parapet exceeds 13 feet above adjacent finish grade or ground floor exterior slabs.
(1) Access, by scuttle or access door, is required to adjacent roofs if more than 42 inches above accessible roofs.
(2) Fixed external ladders are not allowed. Only between roof decks, and shall not be anchored to the roof deck or rest on the roof membrane surface.
b. Locate roof scuttles, at least 30 inches wide by 54 inches long, over Nova Southeastern University accepted means of roof access in mechanical rooms, electrical, custodial storage rooms, or other custodial controlled lockable spaces.
(1) See Division 5 for ladders.
(2) Coordinate with roof framing for unobstructed access.
c. Roof scuttles shall be connected to the building security system and have a hasp at the Interior.

3. Skylights.
a. Skylight use is not allowed unless review and approved in writing from Nova Southeastern University. .
b. Existing skylights shall be removed at re-roofing projects unless otherwise directed by Nova Southeastern University. Provide and match existing structural deck and substrate.
c. See Division 05 - Metals for equipment framing supports and clearances.

4. Wood.
a. Use one piece solid wood plates to secure coping to parapet walls.

07 81 00 Applied Fireproofing
07 84 13 Penetration Fireproofing
07 84 46 Fire Resistive Joint system

Design Standards

1. The intent of these standards is to provide general guidelines on the design and provision for applied fireproofing. These standards shall not supersede code and regulations nor relieve the Design Professional for their professional responsibility.

2. Selection of applied fireproofing should be preceded by a careful analysis of applicable building codes, building regulations and authorities having jurisdiction. Select approved fire-resistance designs from Underwriters Laboratories (UL), based on the following types of applied fireproofing: cementitious fire-resistive materials and mastic or intumescent fire-resistive coating.

3. VOC content for Applied Fireproofing: 0.

Product Standards

1. Compliance with tested fire-resistance designs requires strict adherence to the materials and design details as indicated in UL's Fire Resistance Directory.

2. Specify products only after carefully considering each for its properties, tested performance, serviceability, and appearance, when exposed to view, and cost.

3. Specify cementitious fireproofing of density of not less than 15 lb/cu. ft for interior concealed air conditioned areas. Manufacturers: W.R. Grace; Isolatex, Carboline.

4. Specify medium density Portland cement based cementitious fireproofing of not less than 22 lb/cu. Ft. for interior exposed air conditioned or non-air conditioned spaces where appearance is not important and where unexposed to human touch.

5. Specify high density Portland cement based cementitious fireproofing of not less than 40 lb/cu. Ft for exterior concealed and exposed fireproofing where appearance is not important and where not exposed to human touch.

6. The use of mineral-fiber is not allowed.

7. Specify mastic or intumescent fire-resistive coatings for interior and exterior exposed fireproofing where appearance is important and where exposed to human touch. This type of fireproofing can be finished to a smooth texture. Manufacturers: Albi-Clad; Carboline, Isolatex.

Performance Standards-Minimum

1. Indicate types and extent of fire-resistant assemblies and their corresponding fire-resistance design identifications on drawings; do not this information in the specifications.

2. Verify with fireproofing manufacturers if steel primer is allowed under fireproofing; verify compatibility of primer with fireproofing manufacturer if primer is required. . Address this issue in specifications regarding coordination with steel preparation, compatibility testing, etc.

3. For spaces above ceilings where space is used as air plenum may erode softer formulations of fireproofing. Consult with fireproofing manufacturers for their recommendations. Fireproofing in air plenums required flame-spread and smoke density indexes not exceeding 25 and 50 per NFPA 90A.

4. Architect to request the following submittals:
   a. Product Data. Include VOC data.
   b. Shop Drawings showing extend of each type of fire proofing, applicable fire-resistance U.L. design designations, thicknesses and treatment after application.
   c. Qualification data from installer.
   d. Finish samples where appearance is important.
   e. Mockup sample where appearance is important.

5. Require pre-installation conference at the site.

6. Applicator Qualifications:
   a. Applicator shall be qualified by a third-party qualification program established by UL. In addition applicator must be approved by fireproofing manufacturer, and have a minimum of five ten years experience applying specified fireproofing.

Field Quality Control

1. Manufacturer's field service: The Architect shall request the services of manufacturer technical representative to inspect the preparation and application of materials. The manufacturer's technical representative must visit the site before the installation, one visit during installation, and one visit after completion.

2. Require special inspections of applied fireproofing as mandated by the International Building Code. Require special inspections as mandated by local codes.

3. Testing to be performed by an independent qualified testing laboratory paid by Owner.

07 92 00 Joint Sealants

Design Standards

1. General:

   a. This section contains the criteria for the design and materials selection of joint protection, including but not limited to joint sealants for traffic joints; non-traffic joints; mildew resistant and acoustical joints; latex sealant/caulking compounds; backer rods; sealant-filled foam strips; bond breaker tapes; and primers.

2. Joint Sealants:

   a. Detail and specify the appropriate joint sealer and backing for the following interior and exterior conditions. For exterior vertical conditions use silicone sealant. For horizontal traffic and non-traffic joints, use urethane sealants. Refer to current manufacturers' sealant guide. Joint Sealant applications include but are not limited to:
      (1) Joints in Vertical and horizontal surfaces.
      (2) Vertical Expansion and Control Joints.
      (3) Sealants exposed to physical abuse.
      (4) Joints in Glass, ceramics, steel, aluminum and plastic applications.
      (5) Joints in Precast panels joints; and joints between curtain walls and precast panels.
      (6) Joints within Structural and non-structural glazing.
      (7) Joints in Tub and Shower enclosures, sinks, and countertops.
   b. VOC content for Joint Sealants: 150 g/L or less.
   Consider the joint dimension and expected movement to specify the proper sealant. Good architectural practice calls for joint design four times the anticipated movement due to construction tolerances and material variations
   d. Consider if the application is for new construction or remedial/remodeling projects.
   e. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as confirmed demonstrated by sealant manufacturer based on testing and

field documented experience. Confirm with joint sealant manufacturers if primer is required/recommended on surfaces receiving joint sealant. Specifications to include requirement for following testing:

(1) Preconstruction Compatibility and Adhesion Testing performed by sealant manufacturer.
(2) Preconstruction Field-Adhesion Testing as recommended by sealant manufacturer
(3) Field Testing as recommended by sealant manufacturer.

3. Latex Joint Sealants/Caulking Compound:

a. Use latex joint sealants/caulking for interior non-moving joints on and between fields painted surfaces.
b. Use mildew resistant interior joint sealant products wherever humid conditions and high temperature exist.
c. Use latex acoustical sealant for exposed and concealed locations of acoustical joints.

4. Joint Backing:

a. Provide backer rod joint filler in horizontal joints subject to foot and vehicular traffic, at a distance beneath slab surface of 1/2 the joint width. Sealant manufacturer's recommendations as to type of backer rod joint filler must be followed.
b. Joint backing shall be omitted from joints in ceramic tile floors, which are less than 1/2 inch deep if the joints are filled fully with sealant and if the sealant's manufacturer approves it. Provide backer rod in all other sealed joints at a depth that will permit application of sealant in an hourglass profile with a depth at neck 1/2 the joint width, but in no case more than 1/2 inch.
c. Whatever the joint size or substrate, provide backer rod or bond breaker tape as necessary at back of sealant to prevent bonding. Exceptions: Sawed concrete joints; items bedded in sealant such as thresholds.
d. Backer rod: Closed cell foam rope of polyethylene, butyl neoprene or other material that will not bond to sealant, 25 to 50 percent larger in diameter than joint width, unless otherwise recommended by sealant manufacturer.

5. Bond Breaker Tape:

a. Polyethylene type of widths to suit joints. Provide over joint fillers other than polyethylene type, unless otherwise recommended by sealant manufacturer.

6. Primers:

a. Include requirement for priming of surfaces based on manufacturer's preconstruction compatibility and adhesion testing. Primer type to be as recommended by sealant manufacturer.

7. Applications:

a. The following guidelines address typical conditions where sealants and related components must be applied. The Design Professional shall complete the following non-all-inclusive list for each specific project:

(1) Joints Requiring Sealants:

(a) Joints around window frames, mullion ends, door frames and wall louvers.

(b) Exterior thresholds, front edges, rear edges and ends.

(c) Exterior and interior exposed and concealed joints between precast wall panel units and interior joints between backs of panels and concrete floor slabs at each level above first floor on fill.

(d) Exterior and interior wall and floor expansion joints including joints between concrete columns in concrete walls, between concrete columns and steel columns and between pre-finished metal wall panels and abutting materials.

(e) Outer perimeters of sheet metal scupper between sheet metal and masonry or concrete and between pre-finished sheet metal scuppers and metal wall panels.

(f) Joints at top of parapet cap flashings including lap joints in flashings.

(g) Joints at top of counter flashings including lap joints in flashings.

(h) Joints at top of pipe and conduit roof penetration counter flashings including lap joints.

(i) Joints at perimeters and splice joints for built-in gutters over pivoted glass panels.

(j) Metal-to-metal joints and metal to concrete joints in skylights.

(k) Joints between building walls and concrete walks and concrete paving. Joints in exposed concrete floors.

(l) Expansion joints, control joints, penetrations and perimeter joints in mechanical equipment room wearing slabs, patio slabs, and balcony slabs.

(m) Expansion joints at perimeter of ceramic floor tile areas and joints at interior corners in tiled wall and base areas.

(n) Perimeter joints at electrical and mechanical items penetrating walls, floors, ceilings and roofs.

(o) Expansion joints in quarry tile and paver tile areas 12 feet to 16 feet o.c. both ways in field and at perimeter.

(p) Expansion joints at all exposed decks and surfaces.

(q) Joint at perimeter of flagpole.

(r) Joints where Portland cement plaster/stucco and cement plaster abut other materials.

(s) Joints between walk-in refrigerators, freezers, food service equipment and other building surfaces using sanitary, mildew resistant silicone type sealant.

(t) Joints between sink and vanity countertops/backsplashes and other building surfaces. Joints in countertops. Use mildew resistant sealant.

(u) Joints between walls and plumbing fixtures such as sinks, lavatories, urinals and prefabricated shower stalls, using mildew resistant sealant.

(v) Joints around piping in shower stalls and bathtub areas, using mildew resistant sealant.

(w) Bedding of metal accessories and fastenings in shower stalls and bathtub areas, using mildew resistant sealant.

(x) Locations indicated on the drawings and where required to make joints weathertight.

(2) Joints Requiring Latex Joint Sealants/Caulking

(a) Joints between interior hollow metal door and window frames and gypsum board, cement-plaster, masonry.

(b) Non-moving non-traffic joints between painted interior surfaces.

8. Colors

a. Select colors from standard manufacturer's color chart.

9. Manufacturer's technical services:

a. Consider using the manufacturer's technical service centers:

(1) To assist in selecting the proper building sealant, properly designed joints and review of joint sealant specification.

(2) To assist in testing such as:

(a) Compatibility and adhesion tests.

(b) Preconstruction field adhesion test to determine preparation and installation methods.

(c) Stain tests to confirm that joint sealant will not stain surfaces to be sealed.

(3) To assist in interpreting test results. To assist in product recommendations, surface preparation and primer.

(4) To assist in reviewing shop drawings and other pertinent technical information.

Products Standards

1. Acceptable Manufacturers and Products:

a. Silicone Sealants-Vertical Joints:

(1) Dow Corning, 790, 791, 795 and 799 Silicone Building Sealant.

(2) General Electric Silicones, NB SCS9000, SCS2000, and UltraPruff II SCS2900.

(3) Pecora, 863, 890, 890FTS 895, 898.

(4) Sika, Sikasil-C995.

(5) Tremco Spectrem 2, Spectrem 3 and Proglaze.

b. Silicone Mildew Resistant Sealants-Vertical Joints and Non-Traffic Horizontal Joints:

(1) Dow Corning, 786 Mildew Resistant.

(2) Pecora 898.

(3) General Electric Silicones, SCS1700.

(4) Tremco Tremsil 200 Sanitary.

c. Urethane Sealants for Traffic Joints:

(1) Tremco, Vulkem 921, Vulkem 45, 116 or 227. Dymeric 240FC.

(2) Pecora, Urexpan NR-201 and Dynatred.

(3) Sika, Sikaflex 1a and Sikaflex 1CSL.

d. Urethane Sealants for Immersible Traffic Joints:

(1) Tremco, Vulkem 45, 245, 116 and 227.

(2) Sika, Sikaflex – 1CSL.

e. Latex Joint Sealants/Caulking Compound
   (1) Pecora Corporation; AC-20+.
   (2) Tremco; Tremflex 834.
f. Latex Acoustical Joint Sealants
   (1) Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
   (2) United States Gypsum Co.; SHEETROCK Acoustical Sealant.
   (3) Tremco; Tremco Acoustical Sealant.

Performance Standards

1. Applicator/Installer Qualifications: The Architect shall require:
   a. An affidavit from the manufacturer approving applicator prior to installation.
   b. Applicator shall have a minimum five years documented experience installing specified joint sealants and shall have successfully completed at least five projects of similar size and complexity.

2. Contractor Submittal requirements:
   a. Submit for project records, sealant manufacturer's letter stating that substrates are acceptable, have been reviewed with the applicator; indicate if primers are required and if so the types of primers required for the various surfaces.
   b. Submit for review, properly identified manufacturer's product data, with names, catalog numbers, specifications, surface preparation, primers required for each different type of surface, mixing and application directions for each product.
   c. LEED requirements, including VOC contents.
   d. Samples
      (1) Sealant manufacturer's full color range charts for selection by Architect and approval by UM.
      (2) Small samples of each type of joint backing rod, sealant and bond breaker tape.

3. Preparation and Limitations: Per sealant manufacturer's recommendations.

4. Application of Sealants
   a. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

5. Field Testing
   a. Water infiltration test will be performed, at the owner's option, at every exterior joint including but not limited to: window, storefront and curtain wall.

6. Warranty
   a. Be aware that some warranties will require prior inspection and testing. Review warranties with manufacturer before preparing specifications.
   b. Silicone Sealants:
      (1) 10 years manufacturer's written warranty.
   c. Urethane Sealants:
      (1) 5 years manufacturer's written warranty.
   d. Applicator/Installer: 2-year warranty covering sealant materials and workmanship covering joint failure should be required. Joint failure is defined as leaks of air or water;

evidence of loss of cohesion; cracking or splitting; fading of sealant material; migration of sealant; evidence of loss of adhesion between sealant and joint edge. The sealant manufacturer and the sealant applicator shall sign this warranty.

07 95 00 Expansion Control

Design Standards

1. General:
   This section contains the criteria for the design and materials selection of building expansion joint covers, including building expansion joint covers for interior and exterior application. Roof expansion joints are not part of this portion of standards.

2. Expansion Control Systems/Joint Covers
   a. Detail and specify the appropriate joint cover and backing material.
   b. Characteristics and locations of expansion control systems/joint covers are determined by the structural engineer in consultation with the Architect.
      (1) Location, size and movement characteristics of expansion joints are of key importance in the selection of expansion control systems/joint covers.
   c. Fire resistant rated expansion control systems are required by building code in fire-rated construction. Most expansion covers can be fire rated by addition of fire barrier.
   d. Exterior expansion covers must be provided with a watertight seal.
      e. Design parking structures requiring joint covers so that joints are located away from turning lanes, breakovers, and acceleration areas. Verify with NSU anticipated speed, weight of anticipated vehicles and loading requirements. Confirm with system manufacturer if selected system meets project requirements. Information/recommendations from manufacturers must be submitted in writing.
   f. Obtain expansion control systems from single source from single manufacturer.

3. Manufacturer's technical services:

   a. Consider using the manufacturer's technical service centers to assist in selecting the proper building expansion control system/joint covers.

Products Standards

1. Specify products only after carefully considering each for its characteristics to accommodate contraction and expansion, joint width, load capacity, fire rating and water-tightness where required.

2. Joint Cover Materials/Types for Interior Application:
   a. Floors: Flush mounted floor systems fabricated with extruded Aluminum Covers, mill finish; other finishes and types must be approved by Nova Southeastern University.
   b. Walls and Ceilings:
      (1) Extruded Aluminum Cover Plate System, anodized or baked enamel finish. Color as selected by Architect.
      (2) Elastomeric extrusions of color as selected by Design Professional.
   c. Provide fire resistance-rated joint covers in fire rated construction. As tested per UL 2079 and ASTM E1966
   d. Manufacturers: Construction Specialties and MM Systems.

3. Joint Cover System for Parking Expansion Covers
   a. Specify system that supports moving vehicle loads, provides smooth walking surfaces for pedestrians, resists damage from dirt, environment exposure and function in weather extremes. The use of rubber pad systems is preferred.
   b. Manufacturer: Watson Bowman Acme Corp., and MM Systems
   c. Use moisture barriers /gutter systems under joint covers.

4. Joint Cover Systems for Open Air Expansion Covers
   a. Slabs/Floors: Specify systems that can provide smooth walking surfaces for pedestrian, withstand environment exposure, resist damage from dirt and function in weather extremes. Select from Aluminum plate systems, mill finish, similar to interior but for heavy duty use and with moisture barrier.
   b. Manufacturers: Construction Specialties, MM Systems.
   c. Exterior Walls and Soffits: Specify vertical cover plate system or flat seal system, subject to Nova Southeastern University approval. Provide moisture barrier behind/under cover. Use Fire barrier where required by conditions. Manufacturers: Construction Specialties and MM Systems.

5. Fasteners
   a. For exterior application specify Type 316 stainless steel.
   b. For interior application specify Type 304 stainless steel.

Performance Standards

1. Installer Qualifications: The Architect shall require:
   a. An affidavit from the manufacturer certifying applicator prior to installation.
   b. Applicator shall have a minimum five years documented experience installing specified expansion control covers and shall have successfully completed at least five projects of similar size and complexity.

2. Contractor Submittal requirements:
   a. Submit for review, properly identified manufacturer's product data, with names, catalog numbers, specifications, and surface preparation.
   b. Shop drawings for each required expansion control cover. Show finishes, installation directions, changes in direction, installation instructions. Indicate where fire resistive rating is required; indicate compliance with UL2079 and ASTM E1966. Indicate moisture barrier. Require that shop drawings be prepared by manufacturer of expansion control cover.
   c. Request samples of exposed finishes including but not limited to metal, extruded elastomeric seals and gaskets, exposed fasteners.

END OF DIVISION 07.

DIVISION 08 OPENINGS

08.1 General Requirements

This chapter includes a full insert of Nova Southeastern Facilities Management - Public Safety Department, Physical Security Division – Locksmith Operations for use by the Design Professional and includes the following listed Criteria Manual of Design and Specification Standards for use.

08.3 Design Criteria

08.3.1 Hollow Metal Doors, Overhead Coiling Doors, Overhead Coiling Fire Curtains, Folding Doors, Aluminum Framed Entrances and Storefronts, All Glass Entrances and Storefronts, Glazed Aluminum Curtain Walls, Aluminum Windows, Door Hardware, Automatic Door Openers, Glazing, Mirrors and Fixed Louvers.

08.4 Specific Requirements (organized by CSI Master Format® 2013 Numbers & Titles).

08 10 00	Doors and Frames (General)
08 11 13	Hollow Metal Doors and Frames
08 14 16	Flush Wood Doors
08 33 23	Overhead Coiling Doors
08 33 50	Overhead Coiling Fire Curtains
08 35 14	Folding Doors
08 41 13	Aluminum Framed Entrances and Storefronts
08 41 26	All Glass Entrances and Storefronts
08 44 13	Glazed Aluminum Curtain Walls
08 51 13	Aluminum Windows
08 71 00	Door Hardware
08 71 13	Automatic Door Openers
08 80 00	Glazing
08 83 00	Mirrors
08 91 19	Fixed Louvers

(REFER TO ATTACHMENT)

DIVISION 09 FINISHES

09.1 General Requirements

This division identifies criteria for the selection of finishes in Nova Southeastern University Buildings with the purpose of establishing minimum standards, acceptable to Nova Southeastern University (NSU), to be used as the basis of design for NSU Main Campus, Fort Lauderdale, Florida. NSU experiences with various materials, products and installations have led to the procedures and practices noted under this Division 09.

Only those sections that are used in typical projects are listed below. Nova Southeastern University has requested that Design Professionals be conscientious that all finishes selected for use on NSU campus is durable and be able to cope with the climate zone and weather conditions of South Florida. Finishes shall allow for cleaning of graffiti and stains with relative ease for facility maintenance staff. Finishes must be selected and specified to comply with the following objectives:

1. Sustainable design, using sustainable products.
   a. At a minimum, all new facilities and renovations must meet LEED “silver” standards.

b. Building products shall not contain products with asbestos, lead, formaldehyde, mercury, volatile organic compounds (VOC's) or any other harmful products. Only non-toxic adhesives are to be used in Nova Southeastern University facilities.
c. Low-emitting finish options are preferred. If finishes with chemical emissions cannot be avoided, off-gassing must be completed prior to Substantial Completion.
d. Design Professional should consider design that uses structure as finish to reduce material use and environmental impact.

2. Ease of maintenance.
   a. All finishes must be of highly durability with overall low maintenance requirements.
   b. Avoid materials that require routine sealing or significant specialized maintenance. Unless specifically authorized by NSU for use on a specific project.
   c. Avoid excessively light or dark colored finishes (especially black) on exterior finishes that would have an excessive tendency to fade or exhibit a short term service-life; both are difficult to maintain.
   d. Reflective or mirror-like surfaces should be avoided on finishes, especially where "touching" can be a regular occurrence requiring a higher degree of maintenance and cleaning.
   e. Appropriate finish materials should be considered in specifically identified high traffic areas; floor grilles should be placed at entries areas to facilities when possible.
   f. Protection of walls and corners shall be provided in areas where carts or other items might damage wall surfaces. Specifically in "back of house" (BOH) or identified service areas.

3. All specified materials must have a demonstrated history in a similar institutional setting, with similar regularity of cleaning and maintenance, for at least a minimum of five (5) years.

4. Design Professional selections shall be the use of materials with a proven service life rather than "cutting edge" trend finishes to reduce the pace of replacement cycles, minimizing associated impact.

5. Avoid the use of custom-designed colors and finish materials on facilities.

6. Current exterior material colors preferred by Nova Southeastern University include the following:
   a. Exterior Metal Finishes: Powder coated finishes: Color: RAL 7038
   b. Exterior Wall Finishes: Sherwin Williams "Dover White" SW6385.
      Sherwin Williams "Conventional Yellow" SW6393
   c. Pantone Finishes: Nova Blue 287C.
      Nova Gray 431C.

   All finish colors must be reviewed and approved by Nova Southeastern University prior to Design Professional implementation into contract documents.

7. Products with a low life cycle cost service-life (that compares installed cost, replacement cost, and cleaning/labor costs over an established time period) are preferred.

8. Design reviews and approval by Nova Southeastern University are required for all finish selections. Design Professionals shall submit a minimum size 11 inches x 17 inch sample boards as part of the design review process (multiple boards may be needed for larger projects). Boards shall be mounted on foam-core with project number, name on the physical board. All samples are

to be clearly marked with manufacturers name, product line and number if applicable and color. This identification can be in a form of a key legend on the back of the board.

9. On Nova Southeastern University renovation projects, all material patches shall match existing materials, finish and color and should blend as closely as possible. Low-emitting materials must be used.

10. Design Professional construction documents must clearly identify and note all finishes including their extent of coverage.

11. Design Professional shall note that prior to the installation of floor finish material, concrete slabs shall be smooth and level; maximum surface variations not to exceed 1/8" in a 10 ft. radius. Grind down ridges and other irregularities for intended floor finish. Relative humidity and moisture shall also be measured and comply with the manufacturer minimum materials recommendations prior to installation.

12. Finish flooring shall extend under all "built-ins". Flooring shall have a minimum slip-resistance of 0.6 at level floors and walks and 0.8 at all ramps, inclined floors and walks.

These objectives are in line with the objectives of all Divisions and should be coordinated with requirements in Division 1 Section "SUSTAINABLE DESIGN REQUIREMENTS."

09.1.1 Submittals

Submittals shall include product data, samples, sustainability data, shop drawings, coordination drawings, and maintenance materials submittals.

09.1.2 Workmanship requirements

Refer to specific requirements included herein.

09.2 Codes & Standards

1. Florida Building Code.
2. Local codes and ordinances, including the Town of Davie.
3. NFPA 101.
4. Tile Council of America-Handbook of Ceramic Tile Installation.

09.3 Design Criteria

Refer to specific requirements included herein. Requirements for Portland Cement Plastering, Gypsum Veneer Plastering, Gypsum Board, Ceramic Tiling, Acoustical Panel Ceilings, Linear Metal Ceilings, Suspended Decorative Grids, Stretched Fabric Ceiling Systems, Fabric Wrapped Ceiling Panels, Stone Flooring, Wood Flooring. Wood Athletic Flooring, Resilient Base and Accessories, Resilient Athletic Flooring, Resinous Matrix Terrazzo Flooring, Resinous Flooring, Tile Carpeting, Sheet Carpeting, Access Flooring, Wall Coverings, Stone Wall Facing, Stone base, Stone Trim, Stone Window Stools, Stretched Fabric Wall Systems, Fabric Wrapped Panels, Sound Absorbing Wall Units (Acoustical Panels), Sound Absorbing Ceiling Panels, Exterior Painting, Interior Painting,, Staining and Transparent Finishing, Multi-color Interior Finishing, High Performance Coatings, High Temperature Resistant Coatings, Elastomeric Coatings and Cementitious Coatings.

09.3 Specific Requirements (organized by CSI Master Format® 2013 Numbers & Titles).

09 24 00	Portland Cement Plastering
09 26 13	Gypsum Veneer Plastering
09 27 13	Glass-Fiber-Reinforced Plaster Fabrications
09 29 00	Gypsum Board
09 30 13	Ceramic Tiling
09 30 33	Stone Tiling
09 51 23	Acoustical Ceiling Panels
09 54 23	Linear Metal Ceilings
09 54 36	Suspended Decorative Grids
09 54 46	Fabric-Wrapped Ceiling Panels
09 63 40	Stone Flooring
09 64 00	Wood Flooring
09 64 66	Wood Athletic Flooring
09 65 00	Resilient Flooring, Base and Accessories
09 65 66	Resilient Athletic Flooring
09 66 23	Resinous Matrix Terrazzo Flooring
09 67 23	Resinous Flooring
09 68 00	Sheet Carpeting and Carpet Tiles
09 69 00	Access Flooring
09 72 00	Wall Coverings
09 75 13	Stone Paneling
09 75 16	Stone Base
09 75 19	Stone Trim
09 75 23	Stone Window Stools
09 77 13	Stretched-Fabric Wall Systems
09 77 23	Fabric –Wrapped Panels
09 84 33	Sound Absorbing Wall Units
09 84 36	Sound Absorbing Ceiling Units
09 91 00	Interior and Exterior Painting
09 93 00	Staining and Transparent Finishing
09 94 19	Multicolor Interior Finishing
09 96 00	High-Performance Coatings
09 96 33	High-Temperature-Resistant Coatings
09 96 53	Elastomeric Coatings
09 97 26	Cementitious Coatings

09 24 00 Portland Cement Plastering

Design Standards

1. General:
   This section includes the guidelines for the design, materials selection, and application of Portland cement plaster/stucco.

2. Comply with Portland Cement Association, Portland Cement Plaster Stucco Manual and ASTM C-926.

3. Portland cement plaster, when used for exterior applications, shall be termed or called stucco.

4. Design Considerations:
   a. Apply stucco directly to concrete unit masonry with applied bonding agent or cast-in-place concrete walls without the use of lath accessories.
   b. Plaster accessories such as corner beads, control joints, plaster stops, etc. are not recommended or permitted and should be avoided where stucco is applied directly to concrete or concrete unit masonry. Accessories tend to crack away from stucco during thermal movement. Intersections of accessory beads are especially prone to leakage.
   c. Where expansion joints occur in the structure, an expansion joint shall also be provided through the stucco assembly. A backer rod and sealant are preferable to plaster accessories.
   d. Where there is a predictable differential movement between substrate materials (such as between concrete unit masonry block and concrete beams and/or columns), or where stress cracks may occur (such as at corners of windows), do not use plaster expansion joints or accessories. If a sealant and backer rod is visually objectionable then apply a section of fiberglass mesh (not metal lath) over the joint or questionable area, stuck into the scratch coat.
   e. If wall joints are required for aesthetic reasons, or to limit a large area of stucco application, do not use accessories to form the joint. The plasterer shall tool or score the joint, by using temporary wood screeds.
   f. For stucco applications on suspended ceiling over metal lath, use accessories such as casing beads, corner beads, and control joints over metal lath substrates. The assembly shall be capable of movement, not rigidly tied to structure, walls, or other elements. The use of plastics accessories is preferred.
   g. Use a maximum of 144 square feet of stucco over metal lath between control joints.
   h. Avoid elastomeric paints on stucco. Elastomeric paint should only be used over old stucco requiring repairs. The elastomeric paint over new stucco could trap the moisture resulting in blistering.
   i. Dark colored stucco is more prone to crack than lighter colors, because of heat absorption. Avoid dark colored paint over stucco.

5. Specification Consideration:
   a. Specify recommended bonding agent in these guidelines to be mixed with stucco mix.
   b. Integrally colored concrete is not permitted, since is hard to patch/retouch.
   c. Coordinate control joints in structure receiving stucco with structural engineer. These control joints will create a pattern in stucco. These joints need to be filled with sealant and backer rod.
   d. Avoid the use of waterproofing admixtures in stucco as they can prevent the proper curing process of the plaster.

6. Surface Preparation:
   a. Concrete Surfaces: Mechanically roughen concrete, clean off dust, loose particles and other foreign matter; remove all traces of concrete from release compound in concrete forms.

b. Concrete Unit Masonry: Concrete Unit Masonry receiving stucco should have texture face; include this requirement in Concrete Unit Masonry section. Before stucco application, dampen dry surfaces of concrete unit masonry for proper suction.

7. Application: Must comply with Portland Cement Plaster Stucco Manual and ASTM C926, including but not limited to application and thicknesses required.
   a. In general, a two coat application is required over masonry and concrete with a thickness of 5/8 inch.
   b. A three coat application is required over metal lath, with a thickness of 7/8 inch.
   c. In general, use smooth sand finish for ceilings and supports and textured finish for walls.
   d. Request to run drip grooves in stucco to provide run drip grooves in exterior doorway heads and exterior window heads.
   e. Request to coordinate work with rough carpentry for proper placement of temporary wood screeds after stucco scratch coat for stucco reveals. After stucco final coat application and removal of wood screeds, to patch stucco reveal to cover nail holes and other defects so those stucco reveal surfaces match adjacent surfaces.
   f. Request that at walls receiving stucco, to embed fiberglass mesh must be embedded over first (scratch) coat at concrete columns and beams extending a minimum of 4 inches over adjacent concrete block walls; also to provide strips (4 inch x 8 inch minimum) of fiberglass mesh over first coat at all corners of openings at masonry and concrete walls receiving stucco.

Product Standards

1. Stucco Materials:
   a. Stucco mix and materials must comply with Portland Cement Plaster Stucco Manual and ASTM C926. In addition the following products should be added to the mix to help prevent cracking and for good bonding.
      (1) Bonding Compound must be acrylic latex emulsion, water resistant type.
      (2) Manufacturers and Types:
         (a) Thoro System Products – Acryl 60.
         (b) Larsen Products Corp. – Acrylic Admixture 101
         (c) Lambert, Acrybond Acrylic Admixture
   b. Fibers for Base Coat: Alkali-resistant, glass or polypropylene fibers, ½ inch long, free of contaminants, manufactured for use in Portland cement plaster.

2. Fiberglass Mesh to embed on scratch coat of stucco: Nominal 4.8 oz./sq. yd., symmetrical interlaced open-weave glass fiber fabric made with minimum 25 percent by weight alkaline resistant coating. Acceptable Manufacturer: Sto Mesh by Sto Finish System or other acceptable manufacturer.

3. Metal lath must be galvanized. In general, the use of expanded metal lath on suspended ceilings is the standard.

5. Exterior accessories must be fabricated from zinc or plastic fabricated from high-impact PVC. Exterior accessories include but are not limited to: Casing beads, control joints, expansion joints, and corner beads.

Performance Standards

1. The Design Professional shall request from the Contractor and submit to Nova Southeastern University:
   a. Product Data.
   b. Shop Drawings showing locations and installation of control and expansion joints including plans, elevations, sections, details of components, and attachments to other work.
   c. Samples of each accessory required.
   d. Structural calculations for exterior ceilings and soffits demonstrating compliance with wind loads.
   e. Applicator qualifications.
   f. Mock-ups as follows:
      (1) For Reveals/Scoring work:
         (a) Prior to installing stucco work, construct panels for application of reveals/scoring, required to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for final unit of Work.
         (b) Locate mockups on-site in the locations as directed by the Design Professional.
         (c) Erect mockups of a 100-sq. ft. minimum by full thickness in presence of Design Professional using materials, including temporary wood screeds.
         (e) Demonstrate the proposed range of aesthetic effects and workmanship.
         (f) Design Professional and Nova Southeastern University must review and accept mockups prior to the start of Work.
         (g) Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed stucco Work.
      (2) For Stucco Work:
         (a) Prior to the installation of any stucco work, construct panels for each stucco texture, required to verify the selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for final unit of Work.
         (b) Locate mockups on-site in the location as directed by the Design Professional.
            1) Erect mockups 100 sq. ft. minimum by full thickness.
            2) The Design Professional and Nova Southeastern University must review and accept mockups before start of stucco Work. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed stucco Work. When directed, remove mockups from Project site or incorporate into the work.
      (3) Mock-ups: Request mockup for any stucco work.

2. Portland Cement Plaster/Stucco Mixes: Comply with ASTM C 926 and PCA Portland Cement Plaster/Stucco Manual. Obtain Nova Southeastern University approval for factory prepared finish coat mixes.

3. Requirements for all surfaces receiving stucco application.
   a. Planes of solid substrates receiving stucco should not vary more than ¼ inch in 10 ft.
   b. Mortar joints of concrete unit masonry should be struck flush.
   c. Surfaces must be roughened to develop a sufficient bond with the plaster.
   d) Portland cement plaster/stucco will crack if assemblies are subject to differential structural movements. Detail isolation requirements on the drawings. Locate control joints at natural lines of weakness. Comply with ASTM C926 and PCA Portland Cement Plaster/Stucco Manual recommendations.

09 26 13 Gypsum Veneer Plastering

Applied on gypsum base panels, unit masonry, or monolithic concrete are permitted with Nova Southeastern University approval only.

09 27 13 Glass-Fiber-Reinforced Plaster Fabrications

Factory-molded units for interior use are permitted with Nova Southeastern University approval only.

09 29 00 Gypsum Board

Interior gypsum board, exterior gypsum board for ceilings and soffits, and tile backing boards.

09 30 13 Ceramic Tiling

Design Standards

1. General:

   a. Tile work shall be designed and specified in accordance with the current edition of the "Handbook for Ceramic Tile Installation" of the Tile Council of North America" (TCNA). Indicate extent and any patterns of tile work on the drawings. Provide details for setting beds and joints. Provide details for setting beds, expansion and control joints, waterproofing, and drain seals.
   b. Products shall comply with ANSI Standard A137.1, "American Standard Specifications for Ceramic Tile".
   c. Do not mix manufacturers. It is preferred that all tile for a project be from one manufacturer.
   d. Consider products with recycled content.
   e. When patching tile in existing areas, develop a pattern rather than merely replacing required tile.
   f. Trim units shall match characteristics of field tile. Bases shall be straight type; edges shall be bullnose.
   g. Setting materials, grouts and sealants shall be appropriate for the installation method.

h. Provide cement board at all wet locations.
i. Coordinate and detail movement joints with building details. Follow the TCNA EJ171 Recommendations.
j. Where not supplied on a backing material, tile shall be placed with metal grid template. Do not use spacer buttons on tile edges. Width of tile joints shall be as recommended by the manufacturer.
k. Joint between floor and wall tile shall be sealed with urethane sealant, not grouted.
l. Tile at Floors:
    (1) Porcelain tile or quarry tile with matte finish is required. Glazed or polished tiles are prohibited.
    (2) Restroom floors: 2-inch x 2-inch x 1/4-inch nominal thickness ceramic mosaic floor tile. Use coved ceramic mosaic tile base and marble thresholds color white, MIA Group "A", complying with ASTM C 503. Slope finished floor to drain over the entire room.
    (3) Quarry Tile: 8-inch by 8-inch or 6-inch by 6-inch by 1/2-inch nominal thickness, unglazed, with non-abrasive wearing surface and matching flush cove base. 100 percent solids, two-part, epoxy mortar and grout at food prep areas.
    (4) Tile Colors: Medium tone, neutral colors are preferred.
m. Tile at Walls:
    (1) Restrooms: 5/16"-inch minimum thickness glazed ceramic wall tile. Provide ceramic tile finish at all walls, not only wet walls, to at least ±6'-0" above finish floor level, in whole tile increments. Leave approximately 12" (minimum) of painted gypsum board from the ceiling.
    (2) Apply at wall areas adjacent to drinking fountains or areas where water might splash and cause staining or deterioration of wall surfaces.
    (3) Tile colors: neutral colors are preferred.
n. Grout:
    (1) Use epoxy type grout meeting ANSI 118.3.
    (2) Grout shall match tile color.
o. Adhesive:
    (1) Tile adhesive shall meet LEED Standards 4.1/4.2EQ (Indoor Air Quality), 4.2MR (Recycled Materials) and 5.1/5.2MR (Regional Materials).

Performance Standards:

1. Comply with ANSI Ceramic Tile Standards. Installation must comply with Tile Council of North America standards (TCNA).

2. Floor tile static coefficient of friction comply with ASTM C 1028 level surfaces and stair treads 0.6 minimum (dry surfaces), ramp surfaces 0.8 minimum (dry surfaces).

3. Latex-Portland cement mortar (thin–set): Compliance with ANSI A108.5 and ANSI A118.4 required. Mortar coverage: 95% minimum. Latex Portland cement for gypsum board and cement board.

4. Medium-bed, latex Portland cement mortar: Use for for tiles 8-inch x 8-inch or larger. Compliance with ANSI A118.4 required.

5. Portland cement mortar (thick-set): For application over waterproofing membrane at shower stalls and where required by job conditions and selected tiles.

6. Waterproofing membrane at shower stalls and where indicated: Use waterproofing membrane approved by Florida Building Code.

7. Full waterproofing membrane under all bathroom and janitor closet floors.

8. Polymer type grout acrylic resin or styrene-butadiene rubber in liquid-latex form for addition to prepackaged dry-grout mix.

09 30 33 Stone Tiling

1. Modular cut stone units are permitted with Nova Southeastern University approval only.

09 51 23 Acoustical Ceiling Panels

Design Standards

1. General:
   a. This section includes the guidelines for the design and materials selection of suspended acoustical panel ceilings.
   b. Select acoustical ceiling systems based on durability, recycled content, lack of Urea-Formaldehyde content, and required acoustical value. Ceilings shall provide the required NRC/CAC STC acoustical ratings for the specific areas as required by Nova Southeastern University and acoustical consultant if available.
   c. Provide acoustical ceilings panel's at all interior spaces, except those subject to moisture, wet areas, or where exposed plenum, gypsum or other ceiling products are required by program; or as otherwise provided by programmatic requirements.
   d. Request from the Contractor manufacturer's literature including material specifications for ceiling type and suspension system components, printed installation directions, samples, and maintenance recommendations for each type of panel required.
   e. Colors, other than white, shall be subject to approval by Nova Southeastern University.
   f. In renovation or remodeling of existing facilities, the restoration of existing ceilings may be an option in lieu of total replacement. Evaluate the cost of cleaning the existing lay-in ceiling and grid system versus installing a new ceiling system and obtain approval by Nova Southeastern University. Cleaning products shall be non-toxic, non-flammable, odorless and in conformance with safety practices; request mockup samples before proceeding with refurbishing work. Consult with the ceiling system manufacturer; verify that refurbishment does not affect warranties.
   g. Specify the system type, size, finish, sound absorption (NRC), STC rating, light reflectance, and fire rating as applicable to each room and condition.
   h. Reflected ceiling drawings shall coordinate all ceiling elements and penetrations including but not limited to lighting, sensors, sprinklers heads, HVAC accessories, alarms, lighting, etc.
   i. Design ceilings so that grids are centered continuous to other adjacent areas where possible.
   j. Center the grid or panel in the space to avoid the use of panels less than 6 inches in width.

k. If tegular panels are cut in the field, match the factory reveal.

Product Standards

1. Approved Products:

   a. Acoustical Panel for General Use: Armstrong Ultima NRC70 impact resistant by Armstrong; USG "Eclipse" Panels #76775, 2 ft x 2 ft x ¾ inch thick with angled slanted edges.
   b. Acoustical Panels for open office use: Armstrong Optima NRC 1.0, 2'x 2'' x ¾ inch regular panel (white); field cuts; must match factory bevel and fin.
   c. Acoustical Panel for Kitchen and Food Preparation Areas: Armstrong, Clean Room Mylar Face #1715 Smooth face panels, 2 ft x 2 ft x ¾ inches thick with square edges or USG Sheetrock ClimaPlus Lay-in #3260.
   d. Acoustical Panel for Gymnasium and Physical Education Areas: Use Armstrong Armatuff # 861 panels or USG Rock Face ClimaPlus #56335, 2 ft x 2ft x ¾ inches thick, with square edges; add retention clips.
   e. Acoustical Panel for Laboratories: Use Armstrong Ceramaguard Medium Texture #607 panels or USG Radar Ceramic ClimaPlus #56644, 2 ft x 2 ft x 5/8 inch thick with square edges; or similar by USG.
   f. Avoid using Acoustical Panel Ceilings in Toilet Rooms and Shower Rooms.
   g. Acoustical Panel Ceiling other than above listed shall be submitted to Nova Southeastern University for approval.
   h. Suspension system: 9/16" grid (white) fabricated from hot dipped galvanized steel with white baked enamel finished Aluminum Cap, complying with ASTM C635. Acceptable manufacturers: Prelude XL High Recycled Content by Armstrong; or USG Donn ZXLA / DXACE flat finish. Other ceiling suspension systems shall be submitted to Nova Southeastern University for approval.
   i. Back of House (verify with Nova Southeastern University for applicable areas): Armstrong School Zone fine fissured; NRC .70, impact resistant.

2. Product Characteristics:

   a. Surface burning characteristics: Class "A" - flame spread 25 or under; smoke developed 50 or under; UL labeled.
   b. Antimicrobial solution: Bio Block coating on both faces of panel to inhibit growth of mold and mildew.
   c. Sag resistance: HumiGuard Plus by Armstrong or equivalent.
   d. Hangers: Appropriate to structure and acceptable to ceiling manufacturer.
   e. String Isolations:

Performance Standards

1. Submit certified laboratory test reports and other data as required for each acoustical ceiling panel and suspension system component required to show compliance with specifications.

2. Submit for review 12 inch square samples of each type ceiling acoustical panel required and 6 inch long pieces of each suspension system component required. Panel samples shall indicate full range of color and texture that will be the standard of quality in the finished installation.

3. Provide complete and coordinated reflected ceiling plans, showing all ceiling mounted devices, including but not limited to sprinkler heads, diffusers, electrical detectors, lighting, etc.

4. The installer shall have a minimum of five years experience in projects of the same type and size of installation. Installers that are certified by the manufacturer are preferable.

5. Require that installation of acoustical panel ceilings be performed only when temperature and humidity conditions approximate the interior conditions that will exist when the building is occupied.

6. Installation of grid suspension system must be in strict accordance with ASTM C636 and manufacturer's published installation drawings, properly leveled in place to a tolerance of 1/8 inch in 12 feet. The Design Professional shall specify the type of hangers and other installation requirements.

7. General Installation Requirements:
   a. Increase the size and strength of suspension system to support light fixtures, acoustical units and related items without deflecting more than 1/360 of the span when tested as a simple beam, ends free, center reading.
   b. Provide metal edge trim at openings, and perimeter. Indicate on drawings and specifications type of edge trim
   c. Request coordination with mechanical and electrical work being performed in areas receiving piping, ducts, electrical and other work that is to be concealed by the ceiling shall be completed, tested and inspected and the proper ceiling height and level established before ceiling system components are installed.
   d. Coordinate labeling requirements for identification of all concealed MEP items that require access for operational or maintenance purposes. (See MEP divisions).

8. Warranty on Acoustical Panel Ceiling: Manufacturer’s shall be the standard 30- year limited warranty including:
   a, Dimensional stability.
   b. Resistance to impact, humidity, mold/mildew, bacterial growth, corrosion and chemical exposure.
   c. Product will be free from warping and sagging resulting from defects in materials and factory workmanship.

09 54 23 Linear Metal Ceilings

Strip, decorative metal systems are permitted with Nova Southeastern University approval only.

09 54 36 Suspended Decorative Grids

Plenum mask ceiling systems are permitted with Nova Southeastern University approval only.

09 54 46 Fabric-Wrapped Ceiling Panels

Shop-fabricated, fabric-wrapped panels applied to ceilings or suspended are permitted with Nova Southeastern University approval only.

09 63 40 Stone Flooring

Exterior and interior stone flooring; does not include stone tile are permitted with Nova Southeastern University approval only.

09 64 00 Wood Flooring

Solid field- and factory-finished are permitted with Nova Southeastern University approval only.

09 64 66 Wood Athletic Flooring

Maple flooring and shock-absorbing subfloor assemblies permitted with Nova Southeastern University approval only.

09 65 13 Resilient Flooring, Base and Accessories

Design Standards

1. General:
   This section includes the criteria for resilient flooring, base and accessories.
   a. Vinyl composition tile, marmoleum, bio-based composition tile.
   b. Vinyl flooring.
   c. Rubber flooring.
   d. Linoleum flooring.
   e. Static-control flooring.
   f. Rubber base.
   g. Edge strips.

2. The following criteria shall be considered when selecting the appropriate type of resilient flooring: room type, style, budget, amount and frequency of foot traffic and rolling carts (psi requirements), noise absorption requirements, type of stains expected (food, oil, chemicals), and level of maintenance required.

3. Flooring should be slip resistant and meet the following fire test results:
   a. Slip Resistance: Static coefficient of friction (James Test): ASTM D2047, plus/minus 0.5.
   b. Fire-Test-Response Characteristics: testing according to ASTM E 648 or NFPA 253.
   c. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
   d. Depending on program requirements, resilient flooring may be acceptable for use at circulation areas, elevators, break rooms, support areas, dorm rooms, classrooms with less than 50 occupants and laboratories.

e. Resilient flooring materials not permitted:
   (1) Cork and laminate.
   (2) Sheet or tile vinyl products except for Nova Southeastern University approved specialized areas.
f. When possible, specify PVC-free and chlorine free resilient flooring products.
g. Heat welded seams and coved base may be required for specialized areas.
h. Forbo Marmoleum Composition Tile (MCT) or Armstrong Migrations Bio-Based tile is preferred to VCT, however these materials can stain and will require maintenance.
i. Flooring should meet LEED Standards such as 4.3EQ (Low-Emitting Materials), 4MR (Recycled Content), 5MR (Regional Materials) and 6MR (Rapidly Renewable Resources), as appropriate for the Work.
j. Resilient Base
   (1) Meet ASTM F 1861 Type TS rubber, continuous roll.
   (2) Use cove base1/8-inch thick by 4-inch high (minimum). Straight base at carpet requires approval by Nova Southeastern University Project Manager.
   (3) Medium tone neutral colors are preferred.
k. Resilient Stair Treads and Risers
   (1) Rubber stair tread with integrated risers are preferred.
   (2) Specify matching rubber stringers and landings by the same manufacturer as the stair tread.

4. The Contract documents shall include coordinated finish schedules and specifications.

5. The Design Professional shall ensure that substitutions do not modify the intended aesthetic effects previously approved by Nova Southeastern University.
   a. Preferred Manufacturers to be used as a Basis-of-Design:
      (1) Armstrong
      (2) Manington
      (3) Centiva
      (4) Amtico
   b. Verify colors and patterns comply with Nova Southeastern University Design Professional intent.

6. Where demountable partitions and other items are indicated for installation on top of resilient flooring, install flooring before demountable partitions are installed.

Products Standards

1. Approved Manufacturers: Provide products from one of the following approved manufacturers:
   a. Vinyl Composition Tile: In general, select design from Armstrong World Industries, Inc., Imperial Texture or Stonetex (10 to 20% recycled content.) Design and color to be approved by Nova Southeastern University. Other acceptable manufacturer: Azrock Commercial; Congoleum; Mannington.
   b. Non-Vinyl Composition Tile: Armstrong Migrations Bio-based Resilient Flooring Tile (BBT), or Forbo Marmoleum Composition Tile (MCT).
   c. Linoleum Flooring: Johnsonite Harmonium xf, Armstrong Linoleum flooring, Forbo Marmoleum and Artoleum,

d. Rubber Flooring: Mondo Commercial Flooring. Nora Systems, Inc., Ecosurfaces Commercial Flooring, Johnsonite. Nova Southeastern University approval is required for any design and color selected.
e. Rubber Base: Armstrong; Johnsonite; Burke/Mercer; Roppe. Use pre-molded exterior and interior corner or field formed exterior and interior corners. Use cove base. Nova Southeastern University approval required on color selection.
f. Rubber Stair Tread/Risers; Johnsonite.
g. Edge Strips:
   (1) Resilient Edge Strips: fabricated from vinyl. Select from the following manufacturers: Burke/Mercer; Johnsonite; Roppe. Indicate configuration on drawings.
   (2) Metal Edge Strips: fabricated from aluminum or stainless steel. Indicate configuration on drawings.

2. Approved Products/Dimensions:
   a. Vinyl Composition Tile: 12 inch x 12 inch x 1/8 inch thick or 18" x 18" x 1/8". Non-Vinyl Composition Tile: 12 inch x 12 inch x 1/8 inch thick or 13" x 13" x 1/8".
   b. Sheet Vinyl Flooring: Approximately 0.085 inch thick. Use welding rods at joints. Linoleum Flooring: Tile or sheets as per project requirements.
   c. Studded Rubber Flooring:
      (1) 39 inches x 39 inches x 1/8 inch thick low profile studded.
   d. Rubber Base:
      (1) 4 inch high, 1/8 inch thick, top-set.
   e. Edge Strips: Vinyl or Metal. Configuration: To be selected.
   f. Weld Rod: Material produced by manufacturer of sheet vinyl flooring for use in heat welded seams.
   g. Primer: Tile manufacturers published recommended low VOC product for surface conditions of this installation. Non-staining type.
   h. Flooring and Base Adhesive: Waterproof, VOC content of 50 g/l or less, stabilized type as recommended by flooring manufacturer.
   i. Floor Polishing Compound: Low VOC product per manufacturer's recommendations to retain or improve flooring coefficient of friction.
   j. 4" H vinyl base, straight at carpet condition, cove base at all others, performed piece at all corners.

3. Colors: The Design Professional shall select colors from standard manufacturer's charts, unless custom colors are requested and approved by Nova Southeastern University. Each color selected and manufacturered to be from one dye lot. Nova Southeastern University approval required.

Performance Standards

1. The Design Professional shall require the following submittals:
   a. Product data, including specifications and printed installation instructions.
      (1) Request data on coefficient of friction and fire test results for resilient flooring.
   b. VOC Content for adhesives, primer, heat welding.
   c. Recycled content of flooring and related accessories.
   d. Other LEED requirements per LEED CHECKLIST
   e. Samples: Full color range samples of each type of resilient flooring, base and accessory for selection by Design Professional. Provide Sample of welding rods for sheet vinyl.

f. Installer qualifications.
g. Maintenance manuals describing maintenance requirements of installed materials, prior to final acceptance of the project. Include recommended polishing products and application procedure.

2. Special attention shall be given to remodeled areas being occupied during the construction process. The areas where adhesive is being installed must be properly ventilated. Adhesive must be "No Vapor" type, free of odor, approved for installation in occupied spaces.

3. The concrete slabs receiving flooring must be prepared according to ASTM F710.
   a. The slab must be tested for moisture content according to the flooring manufacturer's printed instructions.

4. Primer may be required over concrete slab before flooring installation. Include text in specifications requiring verification from adhesive and carpet manufacturer.

6. Installation to be performed in accordance with manufacturer's printed recommendations.

09 65 66 Resilient Athletic Flooring

Resilient floor coverings designed for sports-activity areas are permitted with Nova Southeastern University approval only.

09 66 23 Resinous Matrix Terrazzo Flooring

Design Standards

1. General
   a. Typical locations include major interior public lobbies and main corridors that must sustain high traffic wear as well as present a high quality finish with minimum maintenance.
   b. This section includes poured in place resinous matrix epoxy terrazzo flooring only. Use of other types of resin-based terrazzo systems require approval from Nova Southeastern University
   c. To avoid sealing and waxing, add impregnator to meet COF requirement then grind with 1000 grit to high polish.

Performance Standards

1. NTMA Standards: Comply with NTMA Guide Specification and written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2. Supplier Qualifications:
   a. Suppliers shall provide materials in accordance with NTMA standards.
   b. Primary terrazzo materials used in the floor surfacing shall be the products of a single manufacturer. Secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.

3. Acceptable installer
   a. Must be a contractor member of the NTMA and perform all work in accordance with NTMA standards.
   b. Installer must be acceptable to materials manufacturer.
   c. Mock-up: Prior to starting application of flooring, provide full scale portable mock-up to establish acceptable quality, durability, and appearance. Mock-up size must not be less than 4 square feet.
      (1) Acceptable mock-up to be standard of quality for installed work.
      (2) Unacceptable installed work to be removed and replaced or refinished until acceptable.

4. Acceptable Substrates
   a. Level tolerance: Concrete subfloor shall be level with a maximum variation from level of 1/4" in 10 feet. Any irregularity of the surface requiring patching and/or leveling shall be done using material approved by the manufacturer.
   b. Concrete floor shall receive a light steel trowel finish.
   c. Concrete shall be cured a minimum of 28 days. No curing agents are to be used in areas to receive terrazzo.
   d. Concrete slab shall have an efficient puncture-resistant, reinforced moisture vapor barrier 10 mils thick minimum placed directly under the concrete slab (for slab on grade). Do not use vapor barrier manufactured with recycled material. Testing must be done to verify that the moisture vapor emission rate of the slab does not exceed that as recommended by the manufacturer at time of installation of the flooring or at any future date. Moisture vapor emission and moisture content testing must conform to the requirements of ASTM F-1869 (Calcium Chloride Test) and ASTM F-2170 (Relative Humidity Probe Test). If test results show excessive levels of moisture content or vapor emission rate, apply manufacturer's recommended moisture vapor emission control material based upon the highest test reading.
   e. Saw cutting of control joints must be done between 12 and 24 hours after placement of the structural concrete.

5. Acceptable materials:
   a. Thickness: 3/8 inch
   b. Primer: Only as recommended by the manufacturer.
   c. Epoxy resin binder mixed according to manufacturer's recommendation and tested without aggregate added. All specimens cured for 7 days at 75 degrees plus or minus 2 degrees Fahrenheit and 50% plus or minus 2% R.H. The product shall meet the following requirements:

Property	Test Method	Requirement
Hardness	ASTM D-2240 using Shore D Durometer	60-85
Tensile Strength	ASTM D-412 Specimen made using "C" die	3,000 psi Minimum
Compressive Strength	ASTM D-695 Specimen "B" cylinder	10,000 psi Minimum
Chemical Resistance	ASTM D-1308 seven days at room temperature by	No deleterious effects: Distilled Water

	immersion method	Mineral Oil Isopropanol Ethanol 0.025 Detergent Solution 1% Soap Solution 10% Sodium Hydroxide 10% Hydrochloric Acid 30% Sulfuric Acid

d. Epoxy Resin mixed according to manufacturers recommendations and blended with 3 volumes of Georgia White marble blended 60% #1 chip and 40% #0 chip, ground and grouted with epoxy resin according to 3.02 C-2. Finishing to a nominal l/4" thickness. All specimens cured 7 days at 75 degrees plus or minus 2 degrees Fahrenheit and 50% plus or minus R.H. The finished epoxy terrazzo shall meet the following requirements:

Property	Test Method	Requirement
Flammability	ASTM D-635	Self-extinguishing, extent of burning .025 inches maximum.
Thermal Coefficient of Linear Expansion	ASTM-D-696	25 x 10-6 inches per inch per degree to 140 degrees Fahrenheit
Bond Strength	ACI Committee No. 403/503 Bulletin Title No.59-43 (Pages 1139-1141)	100% concrete failure minimum, with 300 PSI minimum tensile strength.

Note: This test is intended to evaluate the bond to the concrete subfloor and is to be tested at the discretion of the Design Professional. A 100% concrete failure indicates a good bond.

6. Marble Chips or Glass Aggregate:
   a. Size: To conform to NTMA gradation standards.
   b. Hardness according to ASTM C-24l Ha-10 minimum.
   c. 24 hours absorption rate not to exceed 0.75 percent.
   d. Chips shall contain no deleterious or foreign matter.
   e. Dust content less than 1% by weight.

7. Strips:
   a. Stop and divider "L" strips fabricate from zinc.
   b. Note: select gauge from following gauge: 18, 16 or 14 B & S gauge or l/8, l/4, or 3/8 inch heavy top "L" or "K" type. 2. Construction joint double "L" strips (do not use neoprene joint filler material

8. Terrazzo Cleaner:
   a. pH factor between 7 and 10 where applicable.
   b. Biodegradable and phosphate free.

9. Sealer:
   a. Terrazzo sealed with an acrylic or urethane terrazzo sealer or other suitable finish system:
      (1) When pH factor between 7 and 10, where applicable.
      (2) Shall not discolor or amber.
      (3) Flash Point: ASTM D-56, 80 degrees Fahrenheit minimum, where applicable.
      (4) Special stain and/or chemical resistant sealers are needed for certain areas such as resistance to iodine or Betadine.
      COF obtained with sealer: 1028 level surfaces and stair treads 0.6 minimum (dry surfaces), ramp surfaces 0.8 minimum (dry surfaces).
      (5) Some finish systems require unsealed terrazzo for proper installation, to function as designed and to achieve the desired aesthetic effect, consult with Manufacturer of the finish system for requirements.
      (6) Any sealer or finish system not supplied by manufacturer should be properly tested with a mock-up before use. Silicate based densifies in particular should be carefully tested, as they react only with marble chips and will result in a higher degree of polish of the marble chips versus the epoxy matrix, possibly causing a mottled effect.)

09 67 23 Resinous Flooring

Fluid-applied monolithic flooring including decorative epoxy and urethane resins are permitted with Nova Southeastern University approval only.

09 68 13 Tile Carpeting
09 68 16 Sheet Carpeting

Design Standards

1. General:

   a. This section includes the guidelines for the design, materials selection and installation of broadloom carpeting and carpet tiles.
   b. Prior to carpet selection, the Design Professional shall request a copy of the latest "Carpet Specification" developed by the NSU Facilities Design and Construction Department. This document contains detailed instructions for purchasing, as well as a list of all approved products and vendors by areas.
   c. Nova Southeastern University has signed an agreement with Shaw/Patcraft to purchase carpet directly from the mill at significant cost savings.
   d. Nova Southeastern University preferred vendor and installer is Henry's Carpet & Interiors Inc. as the approved installer.
   e. No carpeting should be installed over asbestos tile. If the Design Professional suspects that the tile contain asbestos, he/she must notify the Nova Southeastern University Project Manager, who will order the required testing. Should be presence of asbestos be confirmed, the tiles must be properly abated prior to carpet installation.
   f. Carpeting finish shall be restricted to areas designated by the Standard Interior Finishes for Standards Spaces Chart, (Division 09) (TBD)
   g. Classrooms – Where carpeting is recommended by the Design Professional for classroom installations, only carpet tile shall be specified. In deciding to use carpet tile in classrooms, acoustical, comfort and appearance issues should be weighed against

maintenance issues (PM to coordinate). In large classrooms (i.e.) auditorium or tiered classrooms, the use of carpet tile is restricted to aisles and entry levels. Do not specify carpet tiles under fixed seating.

h. Selection of carpet materials (and enhanced cushion backing systems) should address the traffic characteristics, likelihood and types of potential staining agents, and required longevity of the installation.

i. Carpet selections should take advantage of sustainable carpet options as much as possible. Consideration should be given to the sustainable importance of toxins that the yarn systems may or may not have, the backings used, and the potential for re-cycled or "post-consumable" content.

j. Carpet must be 100% recyclable.

k. The carpet manufacturer must have 100% closed loop recycling and offer free pick-up and recycling.

l. When selecting carpet materials, consider that the carpet will be cleaned only annually. Specify materials choices which provide substantial wear and soil hiding characteristics. Also consider that regular vacuuming will be accomplished with heavy duty equipment. Delicate carpet requiring special attention will not prove durable.

m. Limit color choices to those which will provide substantial wear and soil hiding characteristics. Restrict solid color carpet to accent areas. Do not use light colors.

n. The color board: A sample of the proposed carpeting shall be included in the color board for each area. The Nova Southeastern University Project Manager shall be responsible for identifying other approval parties for each application.

o. The Design Professional shall provide specifications for tufted carpet including: face pile, construction, yarn, style, pile height, stitch rate, gauge, pile face weight, primary backing, secondary backing, width, total weight, manufacturer, carpet name, manufacturer's contact person and phone number, color, and anti-microbial performance.

p. Carpet tile is preferred. Verify colors and patterns with Nova Southeastern University Architect.

q. No pad applications allowed.

Product Standards

1. Selected carpet must meet requirements of CRI's "Green Label Plus" program.

2. The specifications shall include detailed construction, components, performance criteria and test data required to ensure conformance with these standards.

3. Carpeting Fire-Test-Response Characteristics: Select carpeting with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify carpeting with appropriate markings of applicable testing and inspecting agency.
   a. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm

4. The following are minimum requirements for carpet:
   a. Specific optical density of 450 or less.
   b. Maximum gray scale factor of 4 when tested for a period of 40 hours except as otherwise indicated.
   c. Static Resistance: Minimum of 3.0 kV resistances for 20% R.H. at 70 degrees.
   d. Average face yarn tuft bind of 20 lb. for "life of carpet" – wet or dry.

e. Solution dyed nylon with stain resistance.
f. Four-ply yarn
g. Style – Multi Level Loop or Level Loop
h. 1/8" gauge minimum
i. Pile face weight: minimum of 20 oz. for sheet carpet and minimum of 17 oz for carpet tile.
j. Density: Minimum 8000 for corridors, lobbies, libraries. Minimum 7000 for open office, conference and seminar rooms, minimum 6000 for private offices
k. Backing system: Sheet carpet: equal to Ecoworx Performance, Carpet Tile: equal to Ecoworx Tile
l. Roll Width of 12 feet for sheet carpet, 18", 24" or 36" square for carpet tile
m. Microbial resistance limited to minimum of 90 % bacterial reduction and maximum of 20% fungal growth.

5. Carpet Accessory Materials:
   a. Adhesive: Low VOC, waterproof, of type that prevents growth of bacteria and fungus, as recommended and approved by carpet manufacturer for compatibility with carpet.
   b. Seam Cement: Not required on unibond backing. When required use low VOC waterproof, latex type recommended by carpet manufacturer.
   c. Edge Strips: Solid, resilient vinyl or metal; configuration and color to be selected by Design Professional from manufacturer's standard line.
   d. Carpet Edge Guard: Rubber cove wall base color to be selected by Design Professional from manufacture's standard line.
   e. Floor patching compounds: As recommended by carpet manufacturer.

6. Color to be selected by Design Professional, approval from the NSU Facilities Design is required.

7. Approved Manufacturer as Basis-of-Design.
   a. Shaw/Patcraft and other with approval from Nova Southeastern University.

8. Approved Installer
   a. Henry's Carpet & Interiors, Inc.

Performance Standards

1. Carpeting Installation
   a. Request the concrete slabs receiving flooring be prepared according to ASTM F710.
   b. Request that slab be tested for moisture content according to by flooring manufacturer printed instructions.
   c. Primer may be required over concrete slab before flooring installation. Include text in specifications requiring verification from adhesive and carpet manufacturer.
   d. Install carpeting in accord with manufacturer's printed installation instructions.
   e. Do not proceed with installation of the carpeting until the building is enclosed and permanent heating and cooling equipment is installed and functioning.
   f. Carpeting shall be installed continuously under demountable partitions.
   g. Prior to beginning installation, the Design Professional shall review with the installer, edging techniques, lines of demarcation between carpeted and hard surfaced floor areas, edge treatment at doors and thresholds, carpet seams.

h. In general, carpet must be installed by direct glue down method. For special applications at Faculty Residences or other areas requiring padding, follow manufacturer's recommendations for stretch-in installation.

2. Accessories Installation
   a. Request that transition strips be installed where carpeting abuts other flooring including door openings where thresholds are not indicated. Where doors separate carpeted space from uncarpeted space, carpet shall extend under the door when it is in the closed position.

3. The Installer:
   a. Nova Southeastern University shall approve the installer, if firm is other than the firm currently under contract.
   b. The Design Professional shall request evidence of the qualifications of the workers who will be installing carpet.
   c. Installing workers shall have a minimum of five (5) years experience on this type and size installation and references of two similar installation that have been in use for two years minimum.

4. At project completion, the contractor shall furnish extra carpet materials to Nova Southeastern University. The Design Professional shall determine the appropriate amounts based on the size of the project.

5. The Design Professional shall require product data, trade name or catalog number for carpet and accessories; material specifications including flame spread rating of carpet; adhesives; accessories; and printed installation instructions.
   a. Require documentation indicating compliance with testing and product requirements of CRI's "Green Label Plus" program.
   b. Require printed statement of VOC content information for installation adhesive and primer.

6. The Design Professional shall require shop drawings showing layout of seams, including carpet widths and directions, edge condition, and conditions where joined or butted to adjacent materials.

7. The Design Professional shall require samples. The following are suggestions:
   a. 18 in x 18 inch samples of carpet quality in full range of standard colors for selection. Identify sample with manufacturer's name and quality line.
   b. 6-inch long samples of edge strip in full range of configurations and colors for selection.
   c. 6-inch long samples of rubber base, in full range of configurations and colors for selection.

8. The Design Professional shall request carpet care and maintenance instructions. Include the following:
   a. Description of cleaning methods and frequency of cleaning activities.
   b. Description of each piece of equipment, tool and cleaning product used for the carpet maintenance program.

9. The Design Professional shall request the following certificates:
   a. Certificate of Compliance: Submit carpet manufacturer's signed certificate stating that carpet supplied complies with the specifications requirements.
   b. Critical Radiant Flux: Submit certification that carpet supplied passes specified Critical Radiant Flux Classification.

10. Carpet may be subject to testing by an independent testing laboratory to verify that minimum specification requirements have been met.

11. The Design Professional shall require the following warranties from the manufacturer:
   a. Wear, static protection, backing delamination, edge ravel, and tuft bind per terms and requirements as per the agreement with manufacturer. Note: chair pads are required.

12. The carpet shall be clean and undamaged at acceptance of Project. Prior to NSU acceptances the Design Professional shall verify compliance.

13. Request a maintenance manual from carpet manufacturer's including recommendations for the care, cleaning and maintenance of carpeting.

09 69 00 Access Flooring

Modular floor panels and support systems; modular steel stringer system designed to bolt to pedestal heads is preferred and are permitted with Nova Southeastern University approval only.

09 72 00 Wall Coverings

Design Standards

1, General: This section includes the criteria for the application of wall coverings, to include:
   a. Heavy-duty, Non-Vinyl (PVC-free) synthetic wall covering
   b. Heavy duty, synthetic, textile wallcovering

2. Wallcovering is considered a specialty type finish and is not standard in NSU University work. Refer to the Nova Southeastern Interior Design Guidelines for areas where wall covering is permitted.

3. Avoid vinyl (PVC) products

4. Low-VOC adhesives are required.

5. Application of wall covering in interior face of exterior wall is not permitted.

6. Non-vinyl wall covering must meet the performance criteria established for the following vinyl wallcovering category: ASTM F793, Category V, Type II Serviceability or FS CCC-W-408D, Type II Duty. Use Type III Serviceability for heavy-duty synthetic textile wall covering. Any deviations from these standards will require Nova Southeastern University approval.

7. Select patterns and color that will enhance the area. Select a wall covering that is easy to clean and has low maintenance cost.

8. Select a random match type wall covering, if possible, to reduce waste.

9. Non-Vinyl wall covering must be inherently stain resistant. Synthetic textile wallcovering must be inherently stain resistant or treated with a stain resistant coating.

10. Heavy-duty, synthetic textile wallcoverings are composed of Xorel, polyester (recycled contents preferred), polyester blends, and olefin.

11. Provide wall coverings with the following surface-burning characteristics as determined by testing per ASTM E84.
    a. Flame Spread: 25 or less.
    b. Smoke Developed: 450 or less.

Products Standards

1. Products listed here are alternatives to non-vinyl wall covering and require Nova Southeastern University approval is required for use.

2. Non-vinyl, wallcovering: Designtex Duraprene wallcovering, Surface iQ wallcovering by Len-tex (Carnegie Fabrics or MDC wallcoverings)

3. Heavy-duty, synthetic textile wallcoverings: Carnegie Fabrics Xorel, Knoll, Maharam, Design-Tex, Wolf-Gordon, Eykon.

4. Specify adhesives that are mildew resistant, non-staining, non-flammable and low VOC type; compatible with substrate where it will be applied.

Performance Standards

1. The Design Professional shall require the following submittals:
    a. Product data for each type of product specified. Include data on physical characteristics, durability, fade resistance, and flame resistance characteristics.
        (1) Data for adhesives, documentation including printed statement of VOC content.
        (2) Data for recyclable content.
    b. Shop drawings showing location and extent of each wall covering type. Indicate seams and termination points.
    c. Samples for initial selection in the form of manufacturer's color charts consisting of actual units or sections of units showing the full range of colors, textures, and patterns available.
    d. Samples for verification in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics.
        (1) Wall covering material: Full-width sample, not less than 36 inches long, from dye lot used for the work.
            (a) Submit sample with specified treatments applied.
            (b) Mark top and face of material.
            (c) Show complete pattern repeat.

e. Schedule of wall coverings using same room designations indicated on drawings.
f. Product certificates signed by manufacturers of wall coverings certifying that their products comply with specified requirements.
g. Maintenance data for wall covering to include in the operation and maintenance manual.
h. Extra Stock: Request full-size units equal to 5 percent of amount of each type installed.
i. Mock-up sample to demonstrate seam workmanship.

2. Surface Preparation:
a. Surfaces must be prepared in accordance with normally accepted industry standards to provide a substrate suitable for the long term adhesion of specified covering.
b. If surfaces cannot be properly prepared for finishing by specified methods, Nova Southeastern University shall be notified immediately in writing and shall not proceed with work unless directed to by NSU. Failure to notify would mean that the Contractor assumes the responsibility for such surfaces and for rectifying any unsatisfactory results.
c. The Design Professional shall ensure that the installer is required to provide a sanitized surface, free of mold or mildew spores prior to applying any covering to any surface. Ensure that installer does not begin installation until space is enclosed and waterproof. Require that surfaces receive a suitable primer under Painting Section, before application of wall covering.
d. Request that wall covering installer coordinates applications of wall primer on receiving substrates with painting work.

09 75 13 Stone Paneling
Dimension stone interior wall paneling are permitted with Nova Southeastern University approval only.

09 75 16 Stone Base
Dimension stone interior wall base are permitted with Nova Southeastern University approval only.

09 75 19 Stone Trim
Dimension stone interior trim are permitted with Nova Southeastern University approval only.

09 75 23 Stone Window Stools
Dimension stone interior window stools are permitted with Nova Southeastern University approval only.

09 77 13 Stretched-Fabric Wall Systems
Site-assembled and -upholstered fabric systems for walls are permitted with Nova Southeastern University approval only.

09 77 23 Fabric-Wrapped Panels
Shop-fabricated, fabric-wrapped, decorative and tackable wall panels not tested for acoustical performance are permitted with Nova Southeastern University approval only.

09 84 33 Sound-Absorbing Wall Units (Acoustical Panels)

Shop-fabricated, fabric-wrapped, sound-absorbing, sound-diffusing, and sound-reflecting wall panels tested for acoustical performance are permitted with Nova Southeastern University approval only

09 84 36 Sound-Absorbing Ceiling Units

Shop-fabricated, fabric-wrapped, sound-absorbing, sound-diffusing, and sound-reflecting panels and sound-absorbing baffle panels applied to ceilings or suspended are permitted with Nova Southeastern University approval only.

09 91 13 Exterior Painting
09 91 23 Interior Painting

Design Standards

1. General: This section includes the criteria for cleaning, preparation, substrate repair, and caulking, sealing and painting of:
   a. Existing and new exterior surfaces
   b. Existing and new interior surfaces

2. The Contract documents must submit a paint schedule.

3. Existing surfaces shall be tested to determine if lead is present; if lead is present, contact Nova Southeastern University immediately for abatement procedure to follow before proceeding with work.

4. All exposed surfaces shall be painted, except where otherwise indicated in the paint schedule. Do not paint prefinished items, finished metal surfaces, operating parts or labels.

5. Include provisions for the trimming and/or removal of all foliage clinging to, or otherwise obstructing the buildings, to permit access to the areas to be painted.

6. Surface Preparation:
   a. Surfaces must be prepared in accordance with normally accepted industry standards and painting manufacturer's published recommendations to provide a substrate suitable for the long term adhesion of specified coatings. Proper preparation is the responsibility of the contractor.
   b. If surfaces cannot be properly prepared for finishing by specified methods, Nova Southeastern University shall be notified immediately in writing and shall not proceed with work unless directed to by NSU. Failure to notify would mean that the Contractor assumes the responsibility for such surfaces and for rectifying any unsatisfactory results.
   c. The Contractor shall be required to provide a sanitized surface, free of mold or mildew spores prior to applying any coating to any surface
   d. The complete removal of existing paint is not always required nor desired. Pressure cleaning is an acceptable solution. Consult with the paint/coating manufacturer.
   e. The following recommendations for substrate preparation are being provided for guidance only and should not be considered all inclusive. Contractor should be required to follow printed manufacturer's recommendations. Where painting over existing damaged surfaces, contractor should be required to seek assistant from paint

manufacturer, including but not limited to site inspection and testing and written recommendations for surface preparation.

(1) Exterior Metal:
- (a) Remove all rust and contaminants. Surfaces with a hard glossy finish shall be dulled by sandpaper or other abrasive method to ensure adhesion of succeeding coats.
- (b) Prime all bare metal with appropriate primer.
- (c) Clean galvanized surfaces with non-petroleum solvents.
- (e) The painting work shall include the field painting of exposed bare and covered pipes and ducts, including color coding, hangers and exposed metal surfaces of mechanical and electrical equipment.

(2) Exterior Wood:
- (a) Remove all loose, peeling, blistering, flaking paint, chalk, and contaminants by scrapping or sanding. Surfaces with a hard glossy finish shall be dulled by sandpaper or other abrasive method to ensure adhesion of succeeding coats.
- (b) All cracks and holes shall be filled with an appropriate filler material per manufacturer's recommendations. Spot prime and sand prior to finish coat.
- (c) If the old paint is in good condition, exterior wood primer may be eliminated.

(3) Exterior masonry:
- (a) Remove mildew by washing surfaces with a diluted bleach solution. If dirt or grime is also present, add detergent to the solution. Flush with water.
- (b) Remove all loose, peeling, blistering, flaking paint, chalk, and contaminants by scrapping, wire brushing, sanding or water blasting.
- (c) All loose and broken stucco must be removed, bonded and repaired/patch to match existing. All cracks and other hairline cracks must be cleaned out, sealed and repaired with an approved sealant/patching compound.

(4) Plaster:
- (a) Phase projects to allow stucco/plaster surfaces and cast-in-place concrete to properly cure prior to painting.

(5) Joint Sealant/Caulking: All loose, missing, or deteriorated sealant / caulking around exterior windows and doors shall be cleaned out. The joints shall be primed and re-sealed with a top quality silicone joint sealant, prior to the application of the paint.

7. Application:
- a. Apply paints only within the temperature ranges allowed by the manufacturers.
- b. Mix and prepare materials according to manufacturer's written instructions.
- c. Tint each undercoat a lighter shade to simplify identification of each coat.
- d. Apply paints and coatings by brush, roller, or other applicators according to manufacturer's instructions. Spray application shall be scheduled around business hours, and appropriate care must be taken to ensure that vehicles and other property are not damaged by the spray.
- e. Specify paint coats no thinner than the manufacturers recommended spreading rates.

f. Apply the first coat to surfaces that have been cleaned, pretreated or otherwise prepared as soon after preparation has been completed.
g. All new and existing work shall be properly primed prior to painting.

8. Acceptable colors: Select colors from Nova Southeastern University approved paint colors. Avoid the use of dark or bright colors on exterior surfaces and other surfaces exposed to ultraviolet light.
a. Current Nova Southeastern University preferred colors and finishes colors:
Wall Finishes:
1. Sherwin Williams "Dover White SW6385.
2. Sherwin Williams "Conventional Yellow" SW6393.

9. Acceptable products: Only latex based enamels can be used in new applications. Existing oil base painted surfaces shall be prepared to receive new latex based paints. Any exception requires approval by Nova Southeastern University.

10. Acceptable finishes:
a. Eggshell and satin sheen finishes are not acceptable for use.
b. Semi-gloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
c. Use an elastomeric paint system over existing previously painted stucco surfaces; strictly follow manufacturer's instructions; sheen/finish should match other existing finishes; obtain Nova Southeastern University approval.
d. Minimum Dry Film Thickness: 5 mills, unless otherwise recommended by paint manufacturer.

11. All paints per current GBC VOC criteria.

12. Interior Paint:
a. Sherwin Williams. All others require Nova Southeastern University approval.
b. Primer:
(1) PrepRite ProBlock Interior / Exterior Latex Primer Sealer, B51 Series (or)
(2) Multi-Purpose Latex Primer Interior / Exterior, B51-8000 Series.
c. All finish paint: Pro-Mar 200 (no eggshell / satin).
(1) ProMar 200 Zero VOC Interior Latex Flat, B30-2600 Series (or)
(2) ProMar 200 Zero VOC Interior Latex Semi-Gloss, B31-2600 Series.
d. Finish paint offices (Latex Semi-Gloss), restrooms and hallways (Water based Epoxy).
(1) ProMar 200 Zero VOC Interior Latex Semi-Gloss, B31-2600 Series (Offices).
(2) Pro Industrial Pre-Catalyzed Water based Epoxy Semi-Gloss, K46 Series. (Restrooms and Hallways).
e. Housing doors, frames and trim: Water based Epoxy, Semi-Gloss.
(1) Pro Industrial Pre-Catalyzed Water based Epoxy Semi-Gloss, K46 Series.
f. Finish paint at pipes, metals, rails: Water based Urethane, Gloss.
(1) Hydrogloss Single Component Water based Urethane Gloss, B65 Series.
g. Varnish: satin or glossy (gloss type T – pending).
(1) Wood Classic Waterborne Polyurethane Varnish Satin or Gloss, A68 Series.
h. Utility / equipment room floors:
(1) Armorseal Tred-Plex 100% Acrylic Water Based Floor Coating Semi-Gloss, B90 Series (or)
(2) Armoseal HS Polyurethane Floor Enamel Gloss, B66-220 Series.

i. Porch and concrete floors: “Softwear” water base latex enamel.
   (1) Armoseal Tred-Plex 100% Acrylic Water Based Floor Coating Semi-Gloss, B90 Series.

13. Exterior Paint:
   a. Sherwin Williams. All others require Nova Southeastern University approval.
   b. Primer:
      (1) PrepRite ProBlock Interior / Exterior Latex Primer Sealer, B51 Series (or)
      (2) Multi-Purpose Latex primer Interior / Exterior Latex Primer Sealer, B51-8000 Series.
   c. Finish paint / high traffic: Super semi gloss.
      (1) Resilience Exterior Latex Gloss, K44 Series.
   d. Finish paint / low traffic: Super flat.
      (1) Resilience Exterior Latex Flat, K42 Series.
   e. Finish paint at pipes, metal, rails: Water based Urethane, Gloss
      (1) Hydrogloss Single Component Water based Urethane Gloss, B65 Series.
   f. Finish paint for precast concrete lighting poles, color SW TBD. refer to Nova Southeastern University
      (1) Resilience Exterior Latex Gloss, K44 Series.
   g. Reference: factory coating for exterior light fixtures and metal components: Color: RAL 7038 or alternates colors approved by the Nova Southeastern University.
   h. Coordinate with approved Design Guidelines.

Products Standards

1. MPI Standards: Specify products that comply with MPI standards and that are listed in its "MPI Approved Products List."

2. Specify materials that comply with VOC limits of authorities having jurisdiction.
   a. For interior paints and coatings the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
      (1) Flat Paints and Coatings: 50 g/L.
      (2) Non-flat Paints and Coatings: 150 g/L.
      (3) Primers, Sealers, and Undercoaters: 200 g/L.

3. Approved manufacturers:
   a. Sherwin-Williams Co.
      All others require Nova Southeastern University approval.

4. Obtain block fillers, primers, and undercoat materials from the same manufacturer as the finish coats.

5. Furnish Nova Southeastern University with an additional 5% of each material and color applied.

6. The following product selection is provided as a guideline only and to establish a minimum quality standard. The list is not intended to be all inclusive as it pertains to surfaces or products. The Design Professional is responsible for specifying the correct product for the intended application and updating the information contained herein. The Design Professional shall investigate and specify in accordance with the specific conditions found at the particular site.

Exterior Paint Schedule:

a Concrete, Stucco, and Masonry (Other than Concrete Masonry Units): Provide the following finish systems over new, exterior concrete, stucco, and brick masonry surfaces:
- (1) Flat, Acrylic-Enamel Finish: Two finish coats over primer.
  - (a) Primer:
    - (1) Loxon Concrete & Masonry Primer Interior/ Exterior Latex, A24W8300.
  - (b) First and Second Coats:
    - (1) Resilience Exterior Latex Flat, K42 Series (2 Coats).

b. Concrete Masonry Units: Provide the following finish systems over new, exterior concrete masonry units:
- (1) Semi-Gloss, Acrylic-Enamel Finish: Two finish coats over a block filler/primer.
  - (a) Block Filler/ Primer Alkaline Resistant: High-performance, latex block filler applied at spreading rate and mil thickness recommended by the manufacturer.
    - (1) Loxon Block Surfacer, A24W200 Series.
  - (b) First and Second Coats: Semi-gloss, exterior, acrylic-latex enamel applied at the spreading rate and mil thickness recommended by the manufacturer.
    - (1) Resilience Exterior Latex Gloss, K44 Series (2 coats)

c. Wood Trim: Provide the following finish systems over exterior wood trim:
- (1) Medium-Shade, Semi-gloss, and Acrylic-Enamel Finish: Two finish coats over a primer.
  - (a) Primer: Exterior, acrylic-latex primer applied at the spreading rate and mil thickness recommended by the manufacturer.
    - (1) PrepRite ProBlock Interior / Exterior Latex Primer Sealer, B51.
  - (b) First and Second Coats: Semi-gloss, waterborne, exterior, acrylic-latex enamel applied at the spreading rate and mil thickness recommended by the manufacturer.
    - (1) Resilient Exterior Latex Gloss, K44 Series (2 coats).

d. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
- (1) Gloss, Water based Urethane Finish: Two finish coats over a rust-inhibitive primer
  - (a) Primer: Rust-inhibitive metal primer applied at the spreading rate and mil thickness recommended by the manufacturer.
    - (1) Pro Industrial Pro-Cryl Universal Primer, B66-310 Series.
  - (b) First and Second Coats: Gloss, exterior, Water based Urethane applied at the spreading rate and mil thickness recommended by the manufacturer.
    - (1) Hydrogloss Single Component Water based Urethane Gloss, B65 Series (2 coats).

e. Aluminum: Provide the following finish systems over exterior aluminum surfaces:
- (1) Gloss, Water based Urethane Finish: Two finish coats over primer.
  - (a) Primer: Rust-inhibitive, acrylic or alkyd-based, metal primer, as recommended by the manufacturer for use over aluminum, applied at spreading rate and mil thickness recommended by the manufacturer.

(1) Pro Industrial Pro-Cryl Universal Primer, B66-310 Series.

(b) First and Second Coats: Gloss, exterior, Water based Urethane applied at the spreading rate and mil thickness recommended by the manufacturer

(1) Hydrogloss Single Component Water based Urethane Gloss, B65 Series (2 Coats).

Interior Paint Schedule

a. Concrete and Masonry (Other than Concrete Masonry Units):

(1) Semi-gloss, Acrylic-Enamel Finish: Two finish coats over primer.

(a) Primer: Alkali-resistant, acrylic-latex, interior primer applied at the spreading rate and mil thickness recommended by the manufacturer.

(1) Loxon Concrete & Masonry Primer Interior/ Exterior Latex, A24W8300.

(b) First and Second Coats: Semi-gloss, acrylic-latex, interior enamel applied at the spreading rate and mil thickness recommended by the manufacturer.

(1) ProMar 200 Zero VOC Interior Latex Semi-Gloss, B31-2600 Series (2 coats).

b. Concrete Masonry Units:

(1) Semi-gloss, Acrylic-Enamel Finish: Two finish coats over block filler.

(a) Block Filler: High-performance, latex-based, block filler applied at the spreading rate and mil thickness recommended by the manufacturer.

(1) Loxon Block Surfacer, A24W200 Series.

(b) First and Second Coats: Semi-gloss, acrylic-latex, interior enamel applied at the spreading rate and mil thickness recommended by the manufacturer.

(1) ProMar 200 Zero VOC Interior Latex Flat, B30-2600 Series (2 coats).

c. Gypsum Board: Provide the following finish systems over new, interior gypsum board surfaces:

(1) Flat, Acrylic-Enamel Finish: Two finish coats over a primer. (Use Semi-Gloss Pro Industrial Pre-Catalyzed Water based Epoxy, K46 Series (Two Coats over primer) at Toilets and Kitchen areas.

(a) Primer: Latex-based, interior primer applied at spreading rate and mil thickness recommended by the manufacture.

(1) ProMar 200 Zero VOC Interior Latex Primer, B28-W2600.

(b) First and Second Coats: Flat, acrylic-latex, interior enamel applied at spreading rate and mil thickness recommended by the manufacturer.

(1) ProMar 200 Zero VOC Interior Latex Flat, B30-2600 Series (2 coats).

d. Gypsum or Portland Cement Plaster: Provide the following finish systems over new, interior plaster surfaces:

(1) Flat, Acrylic-Enamel Finish: Two finish coats over a primer. (Use Semi-Gloss Pro Industrial Pre-Catalyzed Water based Epoxy, K46 Series (Two Coats over primer) at Toilets and Kitchen areas.

(a) Primer: Alkali-resistant, alkyd- or latex-based, interior primer, as recommended by the manufacturer for this substrate, applied at spreading rate and mil thickness recommended by the manufacturer.
(1) Loxon Concrete & Masonry Primer Interior / Exterior Latex, A24W8300.
(b) First and Second Coats: Flat, acrylic-latex, interior enamel applied at spreading rate and mil thickness recommended by the manufacturer.
(1) ProMar 200 Zero VOC Interior Latex Flat, B30-2600 Series (2 coats).

e. Woodwork and Hardboard: Provide the following paint finish systems over new, interior wood surfaces:
(1) Semi-gloss, Acrylic-Enamel Finish: Two finish coats over a wood undercoater.
(a) Undercoat: Alkyd or acrylic-latex-based, interior wood under coater, as recommended by the manufacturer for this substrate, applied at the spreading rate and mil thickness recommended by the manufacturer.
(1) PrepRite ProBlock Interior / Exterior Latex Primer Sealer, B51 Series.
(b) First and Second Coats: Semi-gloss, acrylic-latex, interior enamel applied at the spreading rate and mil thickness recommended by the manufacturer.
(1) Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 Series (2 coats).

f. Ferrous Metal: Provide the following finish systems over ferrous metal:
(1) Semi-Gloss, Water based Epoxy finish: One finish coat over a primer.
(a) Primer: Quick-drying, rust-inhibitive, Waterborne Universal Primer, as recommended by the manufacturer for this substrate, applied at the spreading rate and mil thickness recommended by the manufacturer.
(1) Pro Industrial Pro-Cryl Universal Primer, B66-310 Series.
(b) Undercoater: Semi-Gloss Water based Epoxy finish, as recommended by the manufacturer for this substrate, applied at the spreading rate and mil thickness recommended by the manufacturer.
(1) Pro Industrial Pre-Catalyzed Water based Epoxy Semi-Gloss, K46 Series (2 coats).
(c) Finish Coat: Semi-Gloss Water based Epoxy finish, as recommended by the manufacturer for this substrate, applied at the spreading rate and mil thickness recommended by the manufacturer
(1) Pro Industrial Pre-Catalyzed Water based Epoxy Semi-Gloss, K46 Series (2 coats).

Performance Standards

1. The Design Professional shall require the following submittals:
a. Product data for each paint system specified.
b. VOC content of each primer and paint required.

c. Samples for initial selection and verification.
d. Mock-ups. One room or surface shall be selected to represent surfaces and conditions for each type of coating and substrate to be painted. Final approval of colors shall be from job-applied samples and require Nova Southeastern University approval.

2. The Contractor shall have insurance covering liability and property damage, and workers compensation coverage.
   a. The contractor shall hold Nova Southeastern University harmless from all liens or damage arising from or caused by this work.

3. The applicator shall be licensed in Broward County and shall demonstrate at least five (5) years of experience in projects of similar size and scope.

4. The Design Professional and the Contractor shall coordinate with Nova Southeastern University the requirements for a staging area.

5. The Design Professional and the Contractor shall coordinate with Nova Southeastern University to notify all occupants of the property to remove any personal items, patio furniture and vehicles.

6. Delivery: Materials shall be delivered to the site in manufacturer's original, unopened packages bearing the manufacturer's name and label. Store materials in tightly covered containers.

7. Field Quality Control:
   a. Nova Southeastern University reserves the right to engage the services of an independent testing agency to sample the paint material to be used. The Contractor may be required to remove any rejected paint work.
   b. Hardware and accessories that are not to be painted shall be removed. If removal is not feasible, provide surface applied protection. Reinstall immediately upon completion of the paint work.

8. Cleaning: The Design Professional shall require that at the end of each working day, all equipment, ladders, paint, supplies etc. be returned to the staging area and the working area shall be left clean.

9. Warranty: Ten (10) year manufacturer's warranty for labor and material. Specify that manufacturer assume responsibility for substrate acceptance and adhesion, to uphold the required warranty.

10. Completed work shall be protected. Provide 'Wet Paint' signs. Touch up and restore damaged surfaces. Remove temporary wrappings.

09 93 00 Staining and Transparent Finishing

This finish shall be factory applied.

09 94 19 Multicolor Interior Finishing

Speckled finishes for use on interior vertical surfaces are permitted with Nova Southeastern University approval only.

09 96 00 High-Performance Coatings

Tile-like epoxy coatings for use on interior substrates are permitted with Nova Southeastern University approval only.

09 96 33 High-Temperature-Resistant Coatings

High-temperature-resistant coatings for use on exterior and interior substrates are permitted with Nova Southeastern University approval only.

09 96 53 Elastomeric Coatings

Exterior waterborne, pigmented, elastomeric coatings for use over concrete, masonry, and stucco are permitted with Nova Southeastern University approval only.

09 97 26 Cementitious Coatings

Polymer-modified cementitious coatings on masonry and concrete; exterior and interior are permitted with Nova Southeastern University approval only.

THE END OF DIVISION 09

DIVISION 10 – SPECIALTIES

10.1 General Requirements

This chapter identifies criteria for the design of specialties systems in Nova Southeastern University buildings with the purpose of establishing minimum standards to be used as a basis of design for Nova Southeastern University (NSU) Buildings at the Main Campus, Fort Lauderdale, Florida. NSU experiences with various materials, products and installations have led to the selections, products and practices noted under this Division 10. The specialties systems/products provided under this division must be selected to provide a work environment for the occupants in a sustainable and reliable design. In some cases qualitative standards are cited by name. It is the intention that the name/items(s) be incorporated in the project. In such cases Nova Southeastern University maintain "in-house" expertise, parts and maintenance stock to service the items indicated. Further, it is in the best interest of Nova Southeastern University to have consistency if only from the standpoint of sheer logistics of maintaining and supplying it many buildings.

The specialties system products must be designed to comply with the following objectives:

1. Sustainable Design and products under the criteria to meet LEED "silver" standards as a minimum to reduce the total building energy consumption.
2. Reflectivity for energy conservation.
3. Longevity.
4. Users comfort.
5. Easy of maintenance.
6. Compatibility with all adjacent materials both new and existing.
7. Solutions with the best value considering a life cycle cost analysis to account for total project cost.
8. Occupant Safety

These objectives are in line with the objectives of all Divisions and should be coordinated with requirements in Division 1 Section "SUSTAINABLE DESIGN REQUIREMENTS."

Quality of the information, materials, shop drawings, reviews, equipment integrity, completeness and installation shall be a major concern. All specialty components are intended for long term usage for the general public designed with specific emphasis for the occupants, disabled and custodial use.
This chapter includes a full insert of Nova Southeastern Facilities Design and Construction Department- Nova Southeastern University Campus Monument Signage (Rev. 02-05-13) Package for use by the Design Professional listed under this Division of the Criteria Manual of Design and Specification Standards for use. These standards supersede requirements listed under this building standard should conflict occurs.

10.1.2 Submittals

Submittal shall include product data, Submittals, Shop drawings, samples and closeout submittals as defined in applicable specification sections.

10.1.3 Workmanship Requirements

Refer to specific requirements included herein.

10.2 Codes and Standards

1. Florida Building Code (FBC)
2. Florida Department of Community Affairs-Florida Accessibility Code for Building Construction (DCA)
3. Florida Fire Prevention Code
4. American with Disabilities ACT (ACT) Accessibility Guide Lines for Building and Facilities; Architectural Barriers (ABA) Accessibility
5. American Disabilities Act of Accessibility Guidelines (ADAAG)
6. American Society of Civil Engineers (ASCE 7)
7. National Electric Code (NEC)
8. National Fire Protection Code (NFPA)
9. Underwriters Laboratory (UL)
10. Local Codes and Ordinances including Town of Davie Code
11. Nova Southeastern University special requirements and experience with various manufacturers, products and installations have led to adopted procedures and practices incorporated into these standards.
12. Specific product manufacturer requirements.
13. The Design Professional shall incorporate

10.3 Design Criteria

Refer to specific requirements under each section included herein.

10.4 Specific Requirements (Organized by CSI Master Format® 2013 Numbers & Titles)

10 11 00	Visual Displays Surfaces
10 12 00	Display Cases
10 13 00	Directories
10 14 16	Plaques
10 14 19	Dimensional Letter Signage
10 14 26	Post and Panel/ Pylon Signage

10 17 00	Telephone Specialties
10 21 13	Toilet Compartments
10 21 16	Shower and Dressing Compartments
10 21 23	Cubicles
10 22 13	Wire Mesh Doors and Partitions
10 22 19	Demountable Partitions
10 22 38	Operable Partitions
10 26 00	Wall And Door Protection
10 28 00	Toilet Room Accessories
10 43 00	Emergency Aid Specialties
10 44 13	Fire Extinguisher Cabinets
10 44 16	Fire Extinguisher
10 51 05	Lockers
10 55 00	Postal Specialties
10 56 13	Metal Storage Shelving
10 56 26	Mobile Storage Shelving
10 73 13	Awnings
10 75 00	Flagpoles
10 83 16	Banners

10 11 00 Visual Display Surfaces

Design Standards

1. The intent of these standards is to provide general guidelines on the design and provision for Specialty components. These standards shall not supersede code and regulations nor relieve the Design Professional from their professional responsibility.

2. LEED “silver” submittals:

    1. Product Data for Credit IEQ 4.1: For adhesives, documentation including printed statement of VOC content.
    2. Laboratory Test Reports for Credit IEQ 4.1: For adhesives, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
    3. Product Data for Credit IEQ 4.4: For composite wood products, documentation indicating that the product contains no urea formaldehyde.
    4. Laboratory Test Reports for Credit IEQ 4.4: For composite wood products used in visual display units, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

3. Visual display surfaces include chalkboards, marker boards, tack boards, and bulletin boards in cabinets.

4. For all chalkboards and all marker boards, a lifetime warranty is required and shall indicate that under normal usage and maintenance, porcelain enamel steel chalkboards are guaranteed for the life of the building. Failure will include the surface lose of writing and erasing capability and/or the chalkboard exhibiting surface crazing, cracking and flaking.

5. Develop a schedule listing sizes, types, mounting heights and methods, colors, number of markers, and other accessories. This schedule shall be used for coordinating design, program requirements, built-ins, and FF&E locations.

6. Typical mounting heights for the bottom edge of instructional boards above finish floor and shall be as follows:
   a. 2'-9" at instructional areas to caulk tray, with an overall 4-0" foot board height.
   b. 3'-0" at staff areas to chalk tray, with an overall 4'-0" foot board height.
   c. 6'-0" for electronic mounting heights to the top of marker board.

7. Instructional boards shall be at least 24 inches from room corners.

8. Size and locate Instructional boards according to Nova Southeastern University program requirements. Field verify all locations and dimension of all units to be installed prior to installation.

9. Writing surfaces shall be of a continuous material with no seams allowed.

10. Chalkboard shall be delivered factory built and constructed and have writing surfaces that shall be a matte finish green vitrified porcelain over 24 gage enameled steel with primer, ground coat and cover coats fused individually. Chalkboard shall be manufactured in accordance to PEI (Porcelain Enamel Institute) specification. Coat concealed faces with primer and ground coats. Core materials shall be on 7/16" hardboard with 0.015" aluminum backing and 1" wide satin finished aluminum trim with concealed fasteners. Writing surfaces shall be continuous materials. Seams are not allowed. Component shall have an ASTM E 84 Class III flame spread rating Index 25. Provide rounded corners on the product.

11. Marker board shall be delivered and be factory built and constructed and have writing surfaces that shall be a low gloss finish white vitrified porcelain over 24 gage enameled steel primer, ground coat and cover coats fused individually. Marker board shall be manufactured in accordance to PEI (Porcelain Enamel Institute) specification. Coat concealed faces with primer and ground coats. Core materials shall be on 7/16" hardboard with 0.015" aluminum backing and 1" wide satin finished aluminum trim with concealed fasteners. Component shall have a ASTM E 84 Class III flame spread rating Index 25. Provide rounded corners on the product.

12. Electronic Marker board shall be delivered and factory built and constructed to provide the manufacturer's standard electronic marker board that consists of touch-sensitive writing surface connected to microcomputer via RS-232 serial cable and that electronically records writing with standard dry-erase markers. Equip unit with cables, software, pens, erasers, mounting hardware, and accessories required for a complete installation. Provide rounded corners on the product.

13. Electronic Marker Board shall follow "smart technology' product standards for system configuration and accessories. The Design professional shall incorporate these standards into the specified products. The manufacturer shall provide and follow these standards in its software with real time recording and printing for everything that is written and drawn on the electronic marker board with a windows based operating system and have the following features:
   a. File Export Formats: BMP, WMF, HTML, and vector-based formats.

b. Compatibility: Compatible with Microsoft NetMeeting or other T.120-compliant software.
c. Features: Capable of the following:
   (1) Saving directly from screen.
   (2) Erasing portions of screen.
   (3) Printing directly from screen.
   (4) Saving individual screens as separate pages.
   (5) Showing onscreen toolbar or keyboard per Nova Southeastern University requirements
   (6) Recognizing not less than four pen colors.
   (7) Recognizing finger touch control for presentations.
   (8) Connecting multiple electronic marker boards to a single computer.
   (9) Showing online help and tutorial.

14. Electronic marker boards shall contain a manufacturer's standard form in which manufacturer agrees to repair or replace electronic marker boards that fail in materials or workmanship within specified warranty period of a minimum three (3) years.

15. Tack boards shall be delivered and be factory built with seamless cork surfaces, burlap backed, over 1/4" hardboard with 0.015" aluminum backing and 1" wide satin finished aluminum trim and have an ASTM E 84 Class III flame spread rating Index 25. Provide rounded corners on the product.

16. Horizontal sliding instructional boards shall have a fixed tack board back panel and 2 tracks for a combination of 4 sliding chalkboards/marker boards.

17. Provide chalk/marker boards with troughs with protective edge guards.

18. Provide a 1 inch high continuous map rail, with a cork insert, at the top edge of the instructional board assembly and include the following:
   a. One pair of map hooks for each 8 feet of map rail length and fraction thereof at all board locations.
   b. One pair of roller brackets at each instructional board.
   c. Two flag holder brackets per instructional space.

19. Projection screens (manual or electrical) shall be wall mounted and not attached to instructional boards. Nova Southeastern University requires that the AV integrators to provide plywood backing (painted to match wall color) to extend the screen one (1) inch from the wall allowing for the bottom of the projection screen to clear the frame of the instruction board.

20. Bulletin board cabinets shall be surface mounted, lockable, with clear satin finish anodized aluminum frames and tempered or laminated glass doors. Lexan products are not allowed. Locate only in secured and supervised areas.

21. Provide proper wall construction/backing to support instructional board units. Provide shop drawings for each unit type for Nova Southeastern University review and approval.

22. Particleboard and fiberboard backing are not allowed.

23. Do not locate instructional boards on operable partitions, unless no other walls are available for use. Use of plywood or sheet metal is preferred by Nova Southeastern University.

24. The following finish criteria shall be followed:
    a. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
    b. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
    c. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

10 12 00 Display Cases

1. LEED “silver” submittals:

    1. Laboratory Test Reports for Credit IEQ 4.1: For adhesives, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
    2. Product Data for Credit IEQ 4.4: For composite wood products, documentation indicating that the product contains no urea formaldehyde.
    3. Laboratory Test Reports for Credit IEQ 4.4: For composite wood products used in display cases and bulletin boards, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2. Design Professional shall develop a schedule listing sizes, types, mounting heights and methods, colors, number of markers, and other accessories. This schedule shall be used for coordinating design, program requirements, built-ins, and FF&E locations.

3. All display cases shall be a either a recessed, surface mounted, factory-fabricated cabinet unit with 3/8” natural cork or fabric / polyester covered tack board assembly on back inside surface, adjustable 6mm tempered glass shelves, operable 6 mm thick glazed tempered sliding weather-stripped glass doors and cylinder lock with two keys, front illuminated or non-illuminated. Recessed display cases shall have trim on face to cover edge of recessed opening. Having an ASTM E 84 Class III flame spread rating Index of 25 Sized to Nova Southeastern University requirements. Provide rounded corners on the product.

3. Display cases product specifications, accessory items, colors, finishes, applications and details shall be reviewed and approved by Nova Southeastern University prior to the final development of the construction documents.

4. The display cases shall be integrated into the architectural design of the building and be located in public corridors and lobbies. Verify actual dimensions of openings for display cases by field measurements prior to fabrication.

5. The following finish criteria shall be followed:
    a. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

b. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
c. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

6. Display cases shall be weather tight.

10 13 00 Directories

1. Develop a schedule listing sizes, types, mounting heights and methods, finishes, colors, number of markers, and other accessories. This schedule shall be used for coordinating design, program requirements, built-ins, and FF&E locations and overall building design.

2. All directories product specifications, accessory items, colors, finishes, applications and details shall be reviewed and approved by Nova Southeastern University prior to the final development of the construction documents.

3. Provide building directories unit consisting of changeable message strips shall be held in place by retainer frame enclosed in manufacturer's standard 1-1/2" to 2" deep perimeter frame; with aluminum-sheet rear cover panel and glazed cover. Nova Southeastern University will advise the Design Professional of the need of Illuminated or un-illuminated unit that shall be provided near the main entrance(s) of each building, and the construction, style and appearance shall be coordinated with the building signage. Having an ASTM E 84 Class III flame spread rating Index 25 and be weather resistant. Provide security fasteners where exposed to view.

4. Provide directories that shall withstand the effects of gravity loads and high velocity wind load pressures as defined by ASCE 7 requirements.

5. Provide maintenance manuals for all illuminated directories. All illuminated directories shall comply with NFPA 70 requirements.

6. Provide a 6'-0" for mounting heights from finished floor to top of directory.

10 14 16 Plaques

1. LEED "silver" submittals:

1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material.

1) Include statement indicating location of manufacturer and distance to Project for each regionally manufactured material.

2. Product Data for Credit IEQ 4.1: For adhesives, documentation including printed statement of VOC content.
3. Laboratory Test Reports for Credit IEQ 4.1: For adhesives, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2. Dedication Plaque, memorial plaques when utilized in new or renovated buildings. Provisions shall be made in the construction documents for a determined wall area in the main lobby or in the vestibule to the main lobby to be used for the installation of a memorial plaque. The wall area shall be architecturally designed to provide an aesthetic setting for the plaque and shall be adequately illuminated. Consult the Nova Southeastern University if the plaque is to be part of the construction documents or will be provided at a future date. Provide sufficient blocking or other materials to support plaque as part of the construction documents.

3. Personal memorial, donor recognition, and room plaques shall be designed and installed based on the space they are to be displayed in. Be aware of and make provisions (space, applicable blocking, utilities and lighting) in the building for donor recognition areas and room plaques.

4. Provide additions, when requested by Nova Southeastern University with a 14 inch by 20 inch high cast aluminum under ASTM 26/B26M requirements or bronze plaque under ASTM B584 requirements, located near the main administration entrance or appropriate addition entry, to include the following:
   a. The names of the University Board Members and the President of the University in office the day the construction contract was awarded.
   b. The year the construction contract was awarded.
   c. The names of the project architect and the general contractor.

5. Building Name if applicable

6. Provide 18 to 24 inch high cast aluminum letters with the building name and 10 inch high address numbers located on "front" elevation of the facility and legible from the public right of way.

7. Cast plaques background texture, border and characters having a uniform face, sharp corners, and precisely formed lines and profiles as requested by Nova Southeastern University. Submittal shall be reviewed and approved prior to fabrication.

10 14 19 Dimensional Lettering Signage

1. The Nova Southeastern University has a standardized system for all campus room numbering and signage. Follow the requirements outlined in the attached Nova Southeastern University signage package with respect to size, color, format, fonts, and materials for the construction documents and the development of all room numbers and signage for the project. All submittals require the approval by Nova Southeastern University prior to finalization to construction documents. All signage and graphic designs in public spaces or for the exterior of any structure must be approved by the Nova Southeastern University Facilities Design and Construction Department prior to completion of construction documents.

2. Interior signs for new buildings, fully renovated buildings, or a fully renovated floor of the building shall comply with current ADA Accessibility Guidelines for building and facilities and NFPA codes, as well as with these standards. In locations where a small renovation is occurring or a small number of signs is needed, it is typically appropriate to conform to the existing sign system in the building and not to conform to these standards.

3. Permanent room numbering to appear on signs shall be fully incorporated into construction documents for the use by the contractor. Each permanent room number shall be unique and consistent

with Nova Southeastern University standards.

a. Floor Designations - For buildings that have multiple at grade entrances levels, the lowest accessible at grade will be designated "Ground Floor". For buildings that have a single at grade level, that will be designated "Level One". Floors below the lowest at grade level will be designated Basement, Sub-Basement and Sub-Sub Basement. Floors above will be designated numerically in order starting with Level One. If there is a partial or secondary level between those primary levels it will be designated intermediate to the level directly below.

b. Permanent Room / Space Numbering Sequence- Room numbering on each floor will be similar to the method used to assign address on a street, odd numbers on left, even numbers on the right in the direction of ascension. This provides a sense of direction or movement from one end of the building to the other. Gaps in the numbering will occur so that the numbering sequence across a corridor is always ascending. For example if there are four rooms on the left before there is a room on the right on Level 1, the left hand rooms would be numbered 101, 103, 105, and 107. The right hand room would be numbered 108 even though it is the first room on that side of the corridor. A series of large rooms should also include gaps for future subdivisions, similar to street numbering. Nested rooms (rooms not directly on a corridor, which are entered from another room) will have the same room number as the lowest numbered room they are entered from, plus a letter suffix designated in a clockwise sequence around the room. An example is room 108A is off of room 108, room 108B is off 108A. Each building shall be reviewed separately to determine where it is best to start the numbering sequence so that it progresses across the floor as a continuous numbering string. Wing designations are to be used only when numbering would require numbers higher than 99 or where a continuous numbering string is not practical.

c. Non-assignable Space such as Corridors, Stairs, Vestibules, Elevators, etc.- these spaces shall be designated 00 with the following suffixes: CR* (corridor), ES* (elevator shaft), LB* (lobby), ST* (stairway), VS* (vestibule). The * indicates a letter to differentiate between similar types of spaces on each floor. An example is corridor on level 2 would be designated 200CRA; a second corridor on that floor would be 200 CRB.

4. An approved signage company shall provide to the University the software and database(s) to install on the Nova Southeastern University computer, and paper (7A-D) to allow the University to produce replacement inserts for each insert size and type.

5. A single manufacturer should provide signs in a specific style. Signs shall be mounted with concealed fasteners or adhered to background as indicated. Mounting height and relationship to doorways should follow.

6. Field verify all locations and dimension of all units to be installed prior to installation.

7. All Identifying signage shall comply with the following:
   a. Americans with Disabilities Act and Accessibility Guidelines (ADA)
   b Florida Department of Community Affairs - Florida Accessibility Code for Building Construction (DCA).
   c. National Fire Protection Code (NFPA).
   d. Other applicable codes.

8. Signage
   a. Accessibility signage, room identification, and life safety signage shall have and comply

raised characters, Braille, and symbols to ADA standards.

b. Provide signage schedule and location plan in all final construction document submittal.

c. Provide raised image laminated plastic interior and exterior signage, according to ADA, program and code requirements to include the following:

(1) Nova Southeastern University signage standards with raised upper case font style per NSU signage standards type letters for room names and room numbers, raised symbols or pictograms, and Grade II Braille at accessible height locations.

(2) Proportions, height, finish, contrast, and locations according to accessibility requirements.

d. Determine building, room, and area numbering with Nova Southeastern University Florida Inventory of School Houses (UMISH) at least 30 days before initial submittal of drawings.

e. Room names at signage of any classroom or laboratory shall be limited to classroom or laboratory unless otherwise requested by Nova Southeastern University remaining spaces shall have names at signage according to Nova Southeastern University signage standards requirements.

f. Provide needed directional signage at inaccessible entrances indicating the route to accessible entrances.

g. Provide directional signage at entrances to inaccessible toilet and bathing facilities indicating the route to the accessible entrances to accessible toilet and bathing facilities.

h. Background Colors:

(1) Provide the following signage with a black background and where required by code

(a) Identifying signage at primary entrances shall contain room names, numbers, and Braille. Provide room numbers and Braille only at secondary or exit doors of these spaces.

(b) Toilet room symbols with verbal text and Braille at each toilet room entry.

(c) Accessible egress signs

(d) Directional signs at corridors indicating direction to specific room numbers or subject areas. Provide one directional sign for every 5,000 square feet of project.

(2) Provide red background signage at the following locations and where required by code:

(a) "FIRE EXTINGUISHER INSIDE" at the main entry door of a room containing a fire extinguisher.

(b) "FIRE ALARM PULL STATION INSIDE" at the main entry door of a room containing a pull station.

(c) "EMERGENCY EGRESS - KEEP AREA CLEAR" at emergency egress openings and not readily identifiable secondary egress doors.

(d) "EMERGENCY RESCUE - KEEP AREA CLEAR" at emergency rescue openings.

(e) "ELEVATOR EMERGENCY" at the elevator emergency alarm bell.

(f) Emergency exit routes at appropriate locations.

(g) "IN CASE OF FIRE DO NOT USE ELEVATOR. USE STAIRWAYS" at elevator call stations.

(h) “STORAGE NOT PERMITTED" at mechanical, electrical, and kiln rooms.

(i) At classrooms with a maximum capacity of instructional or assembly spaces housing more than 50 students. Locate in the space, next to the main entry door.

(j) Raised image signage shall be on a beveled or square edge laminated plastic panel with a thickness of at least 1/8". Tape applied or glued raised text, Braille, or symbols are not allowed.

(k) Attach signage with tamperproof screws, shields, and double stick tape or adhesives at mounting heights of 42 or 60 inches above finish floor to sign centerline at locations according to accessibility requirements.

9. Evacuation Signage
   a. According to FBC code requirements, provide a floor plan with related graphics and text, for contractor's installation, showing the primary and secondary evacuation routes from each space with an occupant load of 6 or more and not having a door opening directly to the exterior.
   b. The routes of evacuation shall be indicated in contrasting colors and only indicate the evacuation route from the applicable space.
   c. Orient the map so when facing the mounting wall adjacent to the room exit, the "YOU ARE HERE" arrow will point up.
   d. Text and numbers shall read from left to right.
   e. Provide a metal frame with appropriate safety glazing.

10. Traffic Signage
   a. Provide galvanized steel signage for traffic control, accessible parking spaces, and accessible passenger loading zones.
   b. Aluminum components are not allowed.
   c. Locate signage away from traffic lanes to be clear of passing buses and cars.

11. Obstruction Warnings:
   a. Comply with all FBC required life safety potential hazards.
   b. Provide padding with colored striping for TV brackets below 6'-8" height:
      (1) Apply such padding to exposed lower edges and corners of bracket with screws at 6 inches on center and double stick tape.

12. Safety Zone Lines:
   a. Lines defining safety zones around machinery accessible to students shall be painted on the floor surrounding each piece of equipment.
   b. Provide a continuous 2 inch wide yellow line, according to the following:
      (1) 36 inches from the machine from any side needed for operation or access.
      (2) 12 inches when machines are back to back, along a wall, or in other special positions.

13. Construction documents shall show the locations, types, sizes, and quantity of Identifying devices.

14. Stairway Identification:
   a. New enclosed stairways serving three or more stories and existing enclosed stairs serving five

or more stories shall comply with NFPA 101:7.2.2.5.4 (a) through NFPA 7.2.2.5.4.1 (m).

10 14 26 Post and Panel / Pylon Signage

1. The Nova Southeastern University has a standardized system for all campus post and panel / pylon signage. Follow the requirements outlined in the attached Nova Southeastern Facilities Design and Construction Department- Nova Southeastern University Nova Southeastern Facilities Design and Construction Department- Nova Southeastern University Campus Monument Signage (Rev. 02-05-13) with respect to size, color, format, fonts, and materials for the construction documents and the development of all post and panel / pylon signage for the project. All submittals require the approval by Nova Southeastern University prior to finalization to construction documents. All signage and graphic designs in public spaces or for the exterior of any structure must be approved by the Nova Southeastern University Facilities Design and Construction Department prior to completion of construction documents. Refer to Appendix "A" Nova Southeastern University Campus Monument Signage (Rev. 02-05-13) at the end of this Division.

10 17 00 Telephone Specialties

Verify Nova Southeastern University requirements.

10 21 13 Toilet Compartments

1. All toilet compartments products accessory items, colors, finish, applications and details are to be reviewed and approved by Nova Southeastern University prior to final development of the construction documents.

2. Field verify all locations and dimension of all units to be installed prior to installation.

3. All toilet compartment items and accessories shall comply with the following:
   a. Americans with Disabilities Act and Accessibility Guidelines (ADA
   b. American with Disabilities ACT (ACT) Accessibility Guide Lines for Building and Facilities; Architectural Barriers (ABA) Accessibility.
   c. American Disabilities Act of Accessibility Guidelines (ADAAG).
   d. Florida Department of Community Affairs - Florida Accessibility Code for Building Construction (DCA).
   e. National Fire Protection Code (NFPA).
   f. Other applicable codes.

4. At group toilet rooms, provide toilet partitions at each toilet and urinal screens at each urinal. Provide privacy screens at showers according to program requirements. All toilet compartments shall have an ASTM E 84 Class III flame spread rating Index 25.

5. Toilet stall partitions, privacy screens, and urinal screens shall be solid plastic, with non-corrosive panels, doors, pilasters, and accessories of polymer resins, providing a waterproof, non-absorbent, self-lubricating surface resistant to marking with pens, pencils, or other writing instruments.

6. Panels shall have a 1 inch minimum thickness.
   a. Color shall be uniform throughout.
   b. Edges shall be machined to a 1/4" radius with sharp corners removed.

7. Toilet partitions, privacy screens, and urinal screens shall have pilasters floor mounted and overhead braced, with full length wall brackets. Other types of mounting conditions may be accepted by on a per condition basis.
   a. Wall brackets shall be continuous solid plastic when available from the manufacturer.
      (1) Stainless steel wall bracket alternate may be accepted by on a per condition basis.
      (2) Wall brackets shall be continuous the full length of the panel and through-bolted at panel and pilasters.
   b. Overhead bracing shall have a metal anti-grip design.

8. Pilaster shoes shall be a solid plastic when available from the manufacturer.
   a. Stainless steel pilaster shoe alternate may be accepted by on a per condition basis.
   b. Shoes shall be fastened to floor with at least 2 connectors and 2 through-bolts at pilasters.

9. Top edges of compartment panels and doors shall be at least 70 inches above finish floor and mounted not more than 12 inches above finish floor. Pilasters shall be 82 inches high minimum.

10. Door hardware, anchorages, and accessories shall be manufacturer's heavy-duty series.
    a. Doors shall be self-closing.
    b. Hinges shall be continuous stainless steel, mounted at doors and pilasters with fasteners as Specified at 8 inches on center. Gravity/cam or integral hinges are not allowed.
    c. Doors shall be furnished complete with necessary wall bumpers, door pulls, 6 inch heavy-duty door strikes, keepers, and latch housings.
    d. Provide accessible door pulls and doorstops as required.
    e. Verify accessibility requirements for door widths and stall sizes.
    f. Fasteners shall be stainless steel, tamperproof one-way sex bolts, or anti-theft torx screws throughout installation. Wall connections shall be plastic anchors, lead anchors, or toggle bolts as required by field conditions.

10 21 16 Shower and Dressing Compartments

1. All shower and dressing compartments products accessory items, colors, finish, applications and details are to be reviewed and approved by Nova Southeastern University prior to final development of the construction documents.

2. Modular shower units shall be solid HDPE panel material, not less than 1” thick, seamless with eased edges and with homogenous color and pattern throughout thickness of material. Component shall be containing a shower compartment and matching dressing compartment using floor and ceiling anchors. Unit shall contain heat sink strip at exposed bottom edges.

3. Shower receptor shall be manufactured from terrazzo.

4. All shower and dressing room compartments shall have an ASTM E 84 Class III flame spread rating Index 25.

10 21 23 Cubicles

1. All cubicle curtains, track, products accessory items, colors, finish, applications and details are to be reviewed and approved by Nova Southeastern University prior to final development of the construction documents.

10 22 13 Wire Mesh Doors and Partitions

1. Wire type constructed of 10 gage steel wire woven into 1-1/2" diamond mesh, fastened to doorframes.

2. Provide swing doors with cylindrical mortise locks.

3. Door and partition components shall be constructed of cold rolled channels.

10 22 19 Demountable Partitions

1. Site assembled demountable partitions having a 1-hour fire rated assembly and a minimum STC 35 rating. Manufactured face panel of gypsum factory primed for field painting with a fabric facing.

2. Doors and frames when required shall have a 1-3/4” solid core wood with a minimum 20 minute fire rating.

3. All cubicle curtains, track, products accessory items, colors, finish, applications and details are to be reviewed and approved by Nova Southeastern University prior to final development of the construction documents.

10 22 38 Operable Partitions

1. At auditoriums, provide enclosures to secure panels when not in use. Means of egress widths shall not be reduced.

2. At classrooms, provide maximum opening widths with panels stacked parallel or perpendicular to overhead tracks and with enclosures to secure panels when not in use.

3. Panel Types:
   a. Single Panels:
      (1) Use at single or multiple wall configurations of any height with manual operation and side or remote stacking.
      (2) Provide automatic indexing or stacking with switching curve for panels over 2 feet high.
      (3) Use multi-directional carriers for panels less than 12 feet high or 4-wheeled trolleys for taller applications.
   b. Hinged Paired Panels:
      (1) Use at straight runs of heights less than 18 feet with manual operation and

center stacking.

(2) Provide 4-wheeled trolleys.

c. Continuously Hinged Panels:

(1) Use with one-way or bi-parting electric operation and center stacking.

(2) Provide 4-wheeled trolleys.

4. Construction:

a. Operable partitions shall be of steel panel and welded frame construction.

b. Particleboard construction is not allowed.

c. Panels finishes shall be one of the following:

(1) High-pressure decorative laminate without splices or joints. Edges shall be straight and sealed.

(2) Vinyl.

d. Panel face shall not exceed a 25 flame spread rating.

e. Provide partition STC ratings of not less than 55 at auditoriums and 48 at other spaces.

f. Provide interlocking vinyl sound seals between panels and drop seals between panels and floor.

g. Above ceiling tracks, provide an acoustical barrier having a sound transmission loss equal to or greater than the operable partition when including the ceiling.

h. Provide manual operation for partitions.

i. Operable partitions shall be suspended from an overhead track and without a floor track or guides.

j. Egress Doors:

(1) Provide egress doors within operable panels when required by code or program.

(2) At auditoriums, do not provide egress doors within operable panels, use alternate means of egress when required by code.

k. Do not locate instructional boards on operable partitions unless no other fixed wall is suitable for viewing or meeting instructional board square footage minimums.

10 26 00 Wall and Door Protection

1. Provide handrail to resist uniform load of 50 lbf/ft and a concentrated load of 200 lbf not applied concurrently.

2. Provide a five year guarantee on workmanship and materials.

3. Wall guards shall be consist of high impact vinyl and stainless steel with Nova Southeastern University approval. 3/16” or heavier gage, PVC or aluminum is necessary to prevent warping.

10 28 00 Toilet Room Accessories

1. Toilet accessory components, mounting heights, and locations shall comply with Federal and local applicable accessibility codes.

2. Paper towel dispensers shall be stainless steel finished and able to dispense the standard of single fold

towels. Four inch deep dispensers cannot be used with the standard towels. Provide at individual lavatories and classroom sinks. Provide one for every two lavatories or fraction thereof in group toilet rooms. Do not provide paper towel dispenser at laboratory sinks.

3. Provide a double toilet paper holder at each water closet and at the highest accessible height and location.

4. Paper towel waste receptacles are not-in-contract.

5. Provide, near the water closet, a sanitary napkin receptacle at female staff and student female use individual toilets and at each female group toilet room stall.

6. Provide stainless steel grab bars with preened surfaces and flanges for exposed mounting at accessible Toilets.
   a. Grab bars and the installation of grab bars shall comply with applicable accessibility codes.
   b. Provide vandal resistant fasteners and backing in partition or wall for sufficient anchoring to resist a 250 pound force applied from any direction.

7. Mirrors
   a. Mirrors in faculty and staff toilet rooms shall be 1/4" tempered glass, electrolytic ally copper-plated, and in stainless steel frames with concealed theft-proof mountings.
   b. Mirrors in public and student toilet rooms shall be polished stainless steel surfaces with 1/4" minimum reinforced pressed board backing and stainless steel frames or wraparound edges. Provide concealed theft proof mountings, proper anchoring, and wall backing according to manufacturer's requirements.
   c. Mirrors in public and group student toilet rooms shall not be installed above lavatories.
   d. Mirrors in individual toilet rooms are not required to be over lavatories.
   e. Provide non-tilting fixed mirrors at appropriate heights and sizes to comply with accessibility requirements.

8. Provide a wall mounted vandal resistant stainless steel soap dispenser over each lavatory classroom and academic hall sink according to program requirements.
   a. Use deck mounted soap dispensers to comply with accessibility requirements.
   b. At locations with multiple lavatories or at group showers, use a centralized gravity soap system when cost effective.
   c. No soap dispensers shall be provided in Residence halls.

9. Hot air hand dryers
   a. Hot air hand dryers shall be installed in all new / renovated public areas in the Resident halls and in all Academic and Administrative buildings.

10. Sanitary napkins
   a. All women’s toilet toilets, in public areas in Resident halls and in all academic / administrative buildings shall have sanitary product dispensing machines (napkin and tampon).
   b. All women’s toilet toilets, in public areas in resident halls and in all academic / administrative buildings shall have sanitary napkins receptacles as part of each stall.

11. Provide rod and heavy duty white vinyl shower curtains with exposed fasteners in showers.

12. Provide heavy duty, chrome plated, robe hooks in shower and dressing areas.

13. Nova Southeastern University typical approved toilet accessories. Design Professional shall provide a submittal for review by NSU for final review and approval:

Accessory Description	**Manufacturer Description and Product Number**
Soap Dispensers-Countertop Mounted (Polished Chrome)	Rubbermaid Commercial Product Line T-C #402241 "One Shot"
Surface Mounted Jumbo Toilet Tissue Dispenser (Stainless Steel)	Bobrick B-2992
Surface Mounted Feminine Napkin Disposal (Stainless Steel)	Bobrick B-270
Sani-Touch Paper Towel Dispenser (Inside ADA stalls only)	Bobrick B-2660
Surface Mounted Waste Receptacle Below Paper Towel Dispenser (Inside ADA stalls only)	Bobrick B-277
Semi-Recessed Tampon/Napkin Dispenser (Stainless Steel)	Bobrick B-47064-25
Semi-Recessed Roll Towel & Refuse Unit (Stainless Steel)	BobrickB-3961
Surface Mounted Seat Cover Dispenser (Stainless Steel)	Bobrick B4221
Vertical Wall Mounted Auto Hand Soap Dispenser (Faux Stainless Steel)	KC Professional Products Inc. KC-11329
Toilet / Restroom Auto Flushers	T-C #401805 Auto Flusher
Janitor's Closet Mop and Broom Holder	Bobrick B239 x 34

10 43 00 Emergency Aid Specialties

1. Provide automated external AED as per State of Florida Legislation requirements and Town of Davie AED Ordinances.

2. Provide fully equipped and stocked first aid cabinet/kits (class "B") as per OSHA Standards 29 CFR -1926.50 App. "A". Refer to ANSI / ISEA Z308.1-2015 Standards. The kit should contain the following minimum contents:

   a. Adhesive bandages 1 x 3 in. (2.5 x 75 cm.)
   b. Adhesive Tape, at least 3/8 in x 2.5 yd. (2.3 m)
   c. Antibiotic application 1/57 oz. (0.5 g)
   d. Antiseptic, 1/57 oz. (0.5 g)
   e. Breathing barrier
   f. Burn dressing (gel soaked) 4 x 4 in. (10 cm x 10 cm).
   g. Burn treatment 1.32 oz. (0.9) application
   h. Cold pack, 4 x 5 in 10 cm x 12.5 cm
   i. Eye covering with means of attachment, 2.9 sq. in. (19 sq. cm) per eye
   j. Eye/skin wash 1 fl. oz. (29.6 ml) total
   k. First aide guide.
   m. Hand sanitizer 1/32 oz. (0.9 g)
   n. Medical examination glove pairs
   o. Roller bandage, 2 x 4 yd. (5 3.66 cm)
   p. Scissors
   q. Sterile pad, 5 x 9 in. (12.7 x 22 .9)
   r. Trauma pad, 5 x 9 in. (12.7 cm x 22.9 cm)
   s. Triangular bandage, 40 x 40 x 56 in. (101 x 101 142 cm)

4. Design professional shall consult and provide subsequent submittals for approval with Nova Southeastern University for location of first aide cabinet and kit in an accessible location.

10 44 13 Fire Extinguisher Cabinets

1. All portable fire extinguishers and non-valve cabinets shall be furnished and installed to meet National Fire Protection association (NFPA) Pamphlet 10, latest edition. Each extinguisher shall be approved by Underwriter's laboratory (UL) and bear their label.

2. Provide each locked, break glass fronted fire equipment cabinet with a knocker or other glass breaking means. Attach knocker in a manner that will allow breaking of glass without removing knocker.

3. An acceptable means of identifying fire extinguisher location must be done by an arrow type sign. Refer to appendix "A", a-1-6.5 of NFPA pamphlet 10.

4. Cabinets shall be painted steel, flanged recessed (similar to fire hose cabinets), lockable and comparable to the preferred Duo Panel Break Glass style of cabinet.

5. Refer to NFPA pamphlet 10, chapter 2,3, and 4, Chapter 2 is used to determine the classification of potential fires and the rating or relative fire extinguishing effectiveness of various type of extinguisher. Chapter 3 assists in the selection of extinguisher which is dependent upon the character of anticipated fires, property construction and occupancy, the vehicle or hazard to be protected, ambient temperature conditions and other factors. The maintenance of extinguishers is determined by Chapter 4.

6. Penetrations of walls by cabinets or other penetrations, unless openings and void are sealed with fireproof materials, are prohibited. Fire rated walls must have the rating by penetrations or reduction of thickness.

10 44 16 Fire Extinguisher and Fire Blankets

1. Comply with applicable codes for quantity and location of fire extinguishers.

2. Locate fire extinguishers in instructional spaces and other staff controlled rooms near primary entrances and at ADA accessible heights. Provide required signage at room entrance.
   a. At instructional spaces and low hazard areas, use fire extinguisher cabinets with tempered glass panel doors. Cabinets shall be either semi-recessed with rolled corners or fully recessed.
   b. At staff spaces and other remaining spaces, use wall brackets with straps.
   c. Extinguisher cabinets in fire rated walls shall be fire rated.
   d. Extinguishers and cabinets shall be visible from the main entry door and not hidden from view behind wall construction, furniture, or built-ins.

3. Areas required containing fire extinguishers:
   a. Flammable areas (sodium bicarbonate 40BC):
      (1) Kitchens (Install alkaline dry chemical, for saponification of greases, within 15 feet of cooking equipment).
      (2) Science laboratories
      (3) Automotive shops
      (4) Boiler rooms
      (5) Air handling unit rooms
      (6) Flammable liquid storage areas
      (7) Duplicating stations
      (8) Home economics classrooms
      (9) Teacher lounges
   b. Hazardous areas (4A - 60BC):
      (1) Woodworking shops
      (2) Storage rooms where wood or paper products are stored
      (3) Electrical rooms
      (4) Portables
   c. Low hazard areas (2A - 10BC):
      (1) Corridors and remaining rooms
      (2) Class A or B fire areas
   d. Electronic lab areas (carbon dioxide, Class C, 10BC)

   e. NFPA for fire blanket requirements. Fire blankets shall have the following requirements:
   f. (1) Manufacturer/ Provider: Grainger Model 9DPA4
      (1) Case Color: Red with Signage on steel case.
      (2) Case Size: 13 in. x 16 in. x 5-1/2 in.
      (3) Materials: Steel cabinet with pre-drilled mounting holes.
      (4) Fire Blanket
         a. Width: 62 in.
         b. Length: 84 in.
         c. Material: Wool
         d. Color: Gray

10 51 05 Lockers

1. Types and numbers of metal lockers are located and specified according to program requirements.

10 55 00 Postal Specialties

1. For Postal Service (USPS) deliveries, provide a USPS approved drop box for a new facility delivery and collection with an embedded base anchorage and with components, installation, and location complying with USPS requirements as per USPS P-1118F.

2. Provide mailroom or mail area locations in administration areas containing open sorting mail modules at least 6 inches high, 12 inches wide and 15 inches deep. Provide quantity according to program requirements. Bottom of highest module shall not exceed 6'0" above finish floor.

10 56 13 Metal Storage Shelving

1. Metal shelving shall be clip-type adjustable shelving of modular unit construction on individual bolted frame assemblies. Sections shall be reloadable and each shelf independently adjustable without the use of tools.

2. Shelving Unit Sizes.
   a. Type A: 85 inches high, 36 inches wide, 12 inches deep, with fixed top shelf, six adjustable shelves, and closed base fronts.
   b. Type B: 85 inches high, 36 inches wide, 18 inches deep, with fixed top shelf, six adjustable shelves, and closed base fronts.
   c. Type C: 85 inches high, 36 inches wide, 24 inches deep, with fixed top shelf, six adjustable shelves, and closed base fronts.

3. Attach shelving units securely to walls with proper backing, or if freestanding, to floors. D. Wall standards with adjustable brackets are only allowed at custodial closets.

10 56 26 Mobile Storage Shelving

1. Provide all steel construction mobile storage shelving consisting of a manually operated with a surface mounted carriage 36” wide x 66” high with 12” shelf depth with flat six shelves that are plumb and level to manufacturer’s tolerance with full height carriage end panels

2. Provide ant-tipping features. The manual operating system shall operate with a 1 lbf requirement to move 1,000 lbs.

3. Provide manufacturer’s five (5) year material and workmanship warranty.

10 73 13 Awnings

1. Provide fixed awnings with welded galvanized dipped steel or aluminum frames meeting the following criteria.
   a. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
   b. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

2. Provide awning and fabric ten (10) year warranty from date of substantial completion. Awnings should provide non-shrink, mildew resistance as per ASTM G21

3. All awning accessory items, finish, applications and details are to be reviewed and approved by Nova

Southeastern University prior to final development of the construction documents. Colors are to be selected by Nova Southeastern University.

4. Field verify at all locations and dimension of all units to be installed prior to installation.

10 75 00 Flagpoles

1. Coordinate flagpole location with Nova Southeastern University and comply with the following:
   a. Exposed height shall be 30 feet plus depth required for embedded foundation with ground sleeve.

2. Flagpole design shall withstand wind velocity pressures determined by American Society of Civil Engineers ASCE-7 requirements.

3. Provide a tapered, seamless fiberglass pole with an internal halyard system. Use of a tapered, seamless aluminum pole and external halyards may be accepted at a secure location.

4. A 6-inch diameter aluminum finial ball with mill finish is the only accepted ornament.

5. Provide a flash collar to match pole finish.

10 83 16 Banner

1. Provide a banner that meets the following structural performance Design, fabricate, and install banners to withstand loads from gravity, wind and structural movement, including thermally induced movement, according ASCE 7 and to resist, without failure, other conditions of in-service use and including weather.

2. All banner accessory items, colors, finish, applications and details are to be reviewed and approved by Nova Southeastern University prior to final development of the construction documents. Shop Drawings: For banners. Show materials, fabrication, dimensions, mounting heights, clearances, and installation details. Show colors and graphic layout and content. Show text message, font, character sizes, and other graphic forms; character spacing, word spacing, and line spacing; margin widths; position of copy; and other information related to graphic design.

3. All banner components should be clear anodized or stainless steel.

4. Show locations for blocking, reinforcement, and supplementary structural support to be provided by others.

5. Nova Southeastern University considers the use of banners as delegated systems when used in conjunction to construction and as such should be reviewed and approved prior to use.

END OF DIVISION 10.

NSU
NOVA SOUTHEASTERN UNIVERSITY

CAMPUS MONUMENT SIGNAGE

Draft Conceptual Design Package

February 5, 2013

General Notes

- Sign installer is responsible for contacting Sunshine One Call 811 to locate underground utilities.
- Sign installer is responsible to acquire a Town of Davie general building permit for signage installation, as well as an electrical permit for the touch-screen sign. No Planning and Zoning approval is required at this time, since signage is part of the overall Campus Master Plan which the University reviews annually with the Town of Davie.
- No signs shall be located in the road right of way.
- The NSU logo is not to be modified, but to be scaled proportionally as shown.
- Refer to sheets 17-20, Signage Schedule for sign text and arrow directions.
- Refer to sheets 15-16, Campus Sign Locations for sign locations.
- Contractor to provide shop drawings showing footing and sign structure and a list of the sign titles/building names (including logo), for review and approval.
- Contractor to provide sign mock-up for review and approval.
- Signs to be installed outside of site triangles at street intersections.
- Signs to be placed a minimum of 30” away from curb.

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NOVA SOUTHEASTERN UNIVERSITY

EDSA

1512 E. BROWARD BOULEVARD, SUITE 110
FORT LAUDERDALE, FLORIDA 33301 USA
TEL: 954.524.3330
LCC000001

PLANNING ▪ LANDSCAPE ARCHITECTURE ▪ URBAN DESIGN

Project:

NSU Campus Monument Signage

Sheet Title:

Table of Contents and General Notes

Project Phase:

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

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Project Number:

112059

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Feb. 5, 2013

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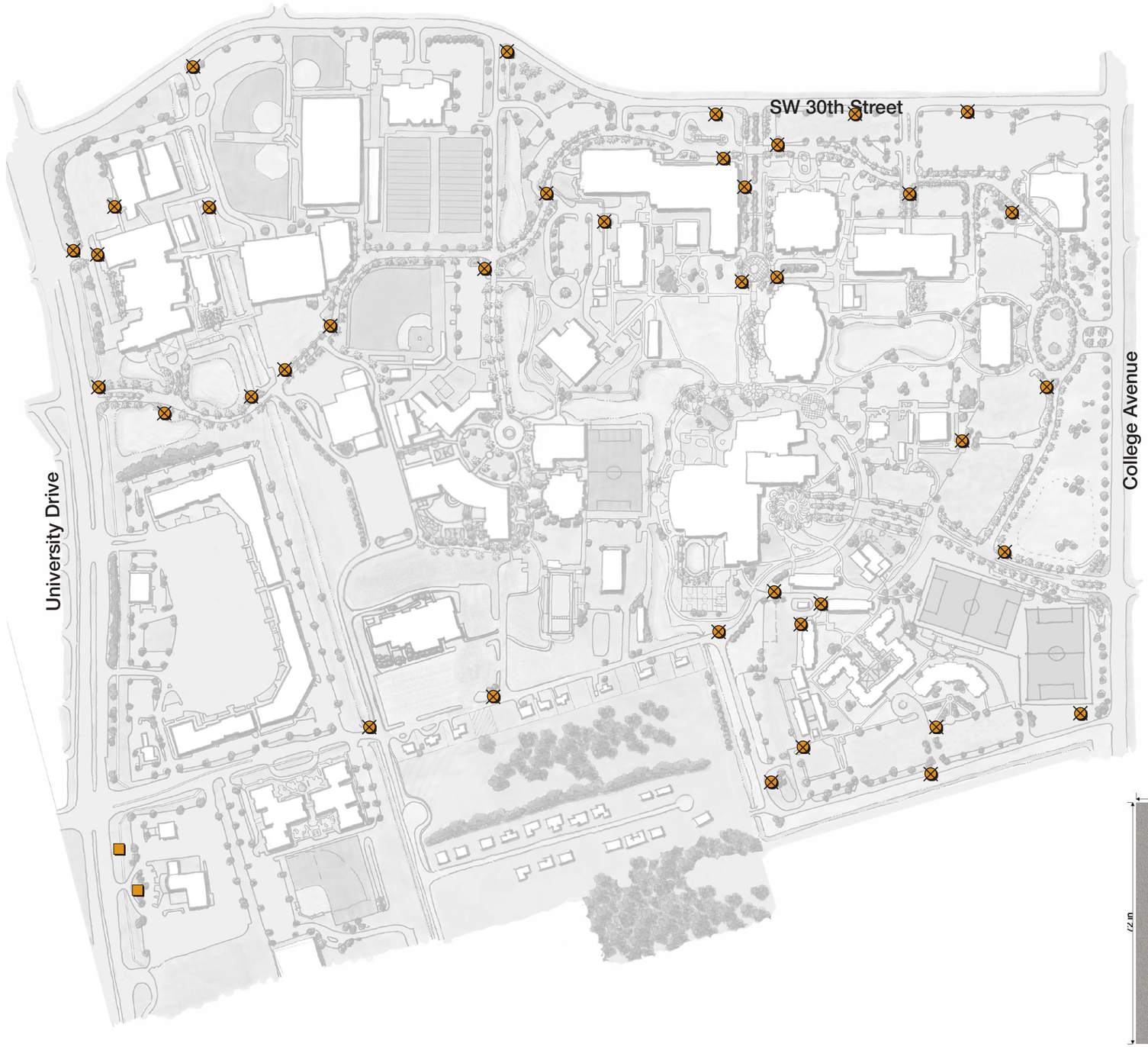

Freestanding Facility Signs to be updated

- Existing Facility Sign

Freestanding Campus Signs to be removed

- Existing Campus Sign

Examples of existing campus signs to be removed.

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Sheet Title:

Signs to be Removed

Project Phase:

Sheet Status:

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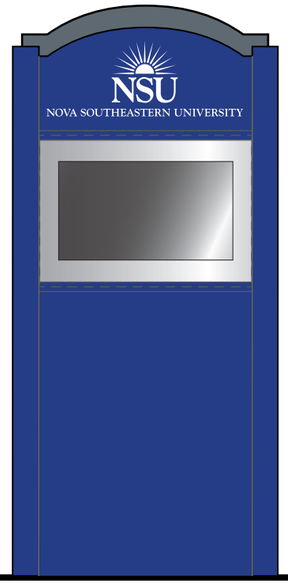
1 Vehicular Directional Sign - Large (VD1)
Elevation
SCALE: 1/2"=1'0"

2 Vehicular Directional Sign - Small (VD2)
Elevation
SCALE: 1/2"=1'0"

3 Pedestrian Directional Sign - (PD1)
Elevation
SCALE: 1/2"=1'0"



4 Pedestrian Kiosk - LED Stand (PS1)
Elevation
SCALE: 1/2"=1'0"

5 Facility Identity - Small (FF2)
Elevation
SCALE: 1/2"=1'0"

6 Roadway Street Signs (SS1)
Elevation
SCALE: 1/2"=1'0"

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Signage Family
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1 Athletics Sign - Large (AD1)
Elevation
SCALE: 1/2”=1’0”

2 Existing Freestanding Facility Sign (T1)
Elevation
SCALE: 1/2”=1’0”

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Signage Family
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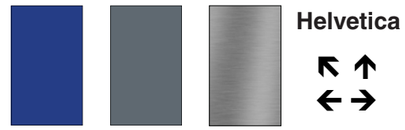
1 Vehicular Directional Sign - Large (VD)
Plan/Elevations

SCALE: 3/4"=1'0"

Graphic Standards:



Pantone 287 C Official Nova Blue

Pantone 431 C Official Nova Gray

Brushed Aluminum

NSU
NOVA SOUTHEASTERN UNIVERSITY

Panels:

- Header/main panel to be of 0.90 aluminum over 3" aluminum channel frame. Prime coat and finish with PMS 287 C (Official Nova Blue) acrylic polyurethane. Copy to be computer cut premium reflective white vinyl.
- Sign to have removable "Slatz" system panels or approved equal, with square track and cap. Brushed Anodized Aluminum. Copy to be computer cut 7-year black reflective vinyl.
- "Slatz" panels to be framed by 1/2" reveal painted PMS 287 C (Official Nova Blue).
- Base filler panel to be of .125 plate aluminum finished PMS 287 C (Official Nova Blue) acrylic polyurethane.

General:

- Signs have both double and single-sided options. See Sign Schedule, page 17-20 for details.

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Vehicular Directional Sign

Project Phase:

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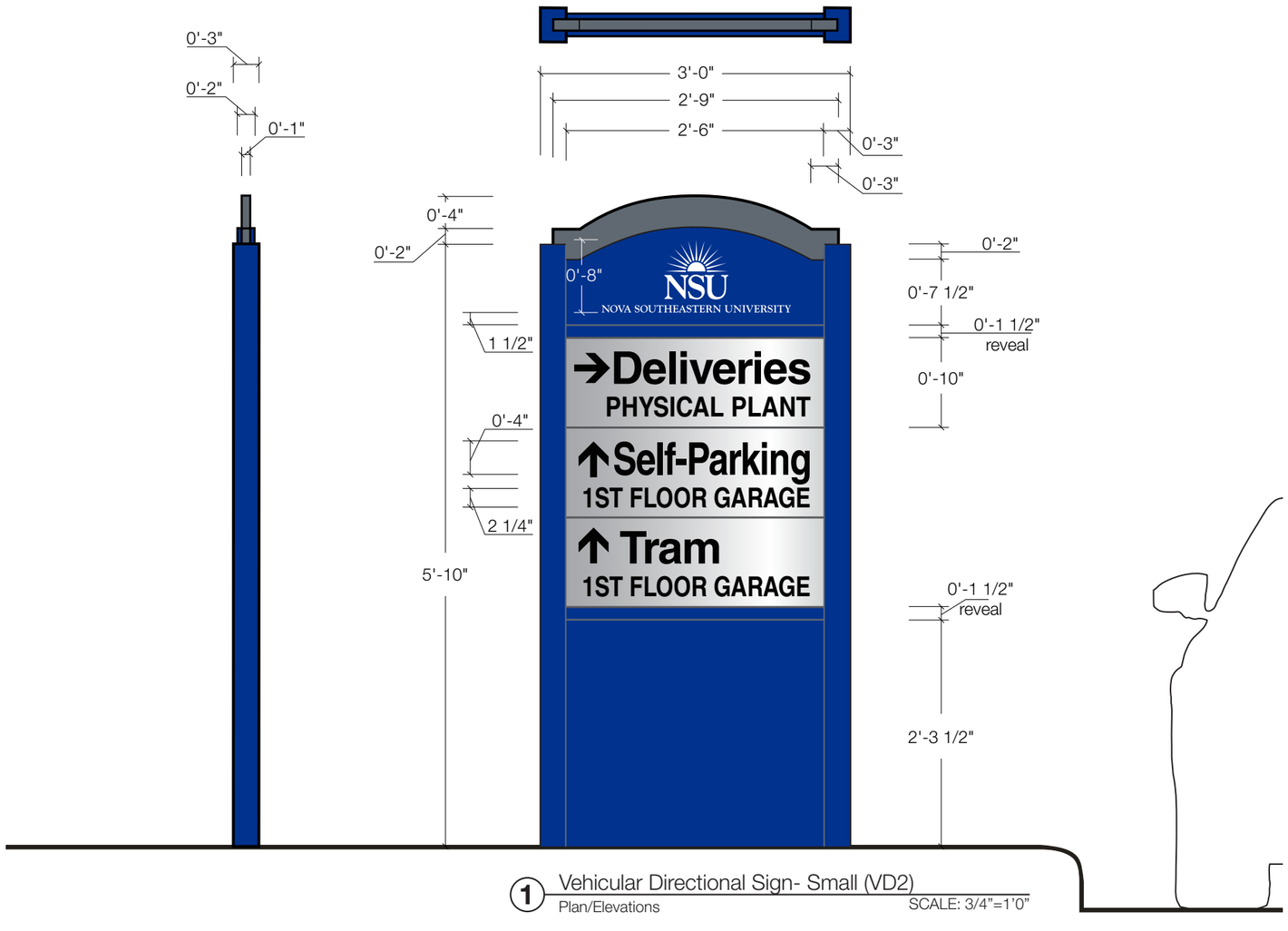
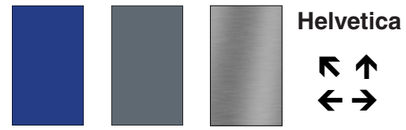


1 Vehicular Directional Sign- Small (VD2)
Plan/Elevations

SCALE: 3/4"=1'0"

Graphic Standards:



Pantone 287 C Official Nova Blue

Pantone 431 C Official Nova Gray

Brushed Aluminum

NSU
NOVA SOUTHEASTERN UNIVERSITY

Panels:

- Header/main panel to be of 0.90 aluminum over 3" aluminum channel frame. Prime coat and finish with PMS 287 C (Official Nova Blue) acrylic polyurethane. Copy to be computer cut premium reflective white vinyl.
- Sign to have removable "Slatz" system panels, with square track and cap. Brushed Anodized Aluminum. Copy to be computer cut 7-year black reflective vinyl.
- "Slatz" panels to be framed by 1/2" reveal painted PMS 287 C (Official Nova Blue).
- Base filler panel to be of .125 plate aluminum finished PMS 287 C (Official Nova Blue) acrylic polyurethane.

General:

- Signs have both double and single-sided options. See Sign Schedule, page 17-20 for details.

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Vehicular Directional Sign

Project Phase:

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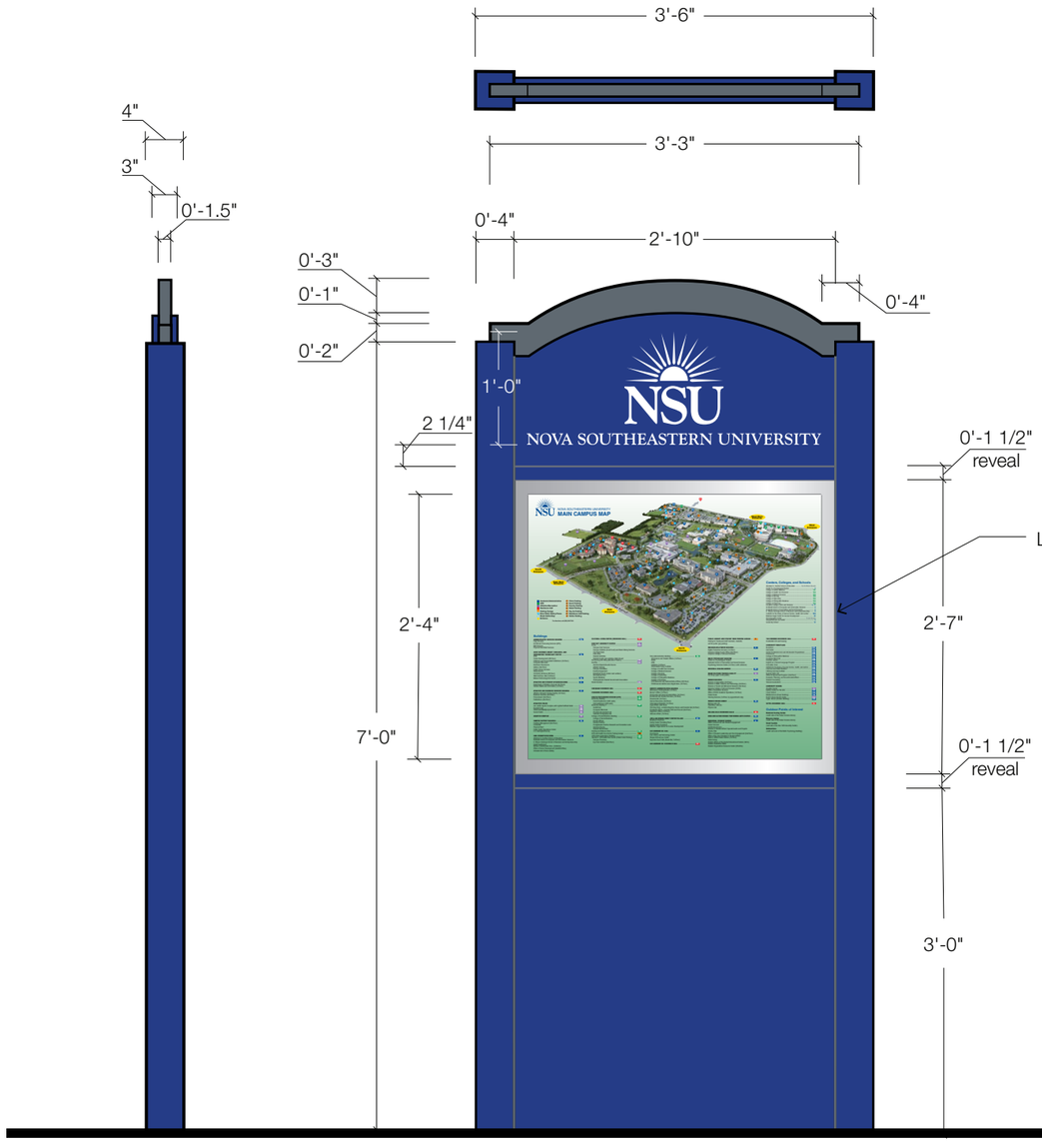

1 Pedestrian Directional Sign (PD1)
Plan/Elevations
SCALE: 3/4"=1'0"

Graphic Standards:

Pantone 287 C Official Nova Blue | Pantone 431 C Official Nova Gray | Brushed Aluminum

NSU
NOVA SOUTHEASTERN UNIVERSITY

Panels:

- Header/main panel to be of 0.90 aluminum over 3" aluminum channel frame. Prime coat and finish with PMS 287 C (Official Nova Blue) acrylic polyurethane. Copy to be computer cut premium reflective white vinyl.
- Sign to include glass panel with standard piano hinge and locking mechanism to house changeable display (2'4" tall x 2'7" wide).
- Glass panel surround to be 1.5" Brushed Anodized Aluminum.
- Glass panel surround to be framed by 1/2" reveal painted PMS 287 C (Official Nova Blue).
- Base filler panel to be of .125 plate aluminum finished PMS 287 C (Official Nova Blue) acrylic polyurethane.

General:

- Changeable display/campus map to be provided by NSU.

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Project:

NSU Campus Monument Signage

Sheet Title:

Pedestrian Directional Sign

Project Phase:

Sheet Status:

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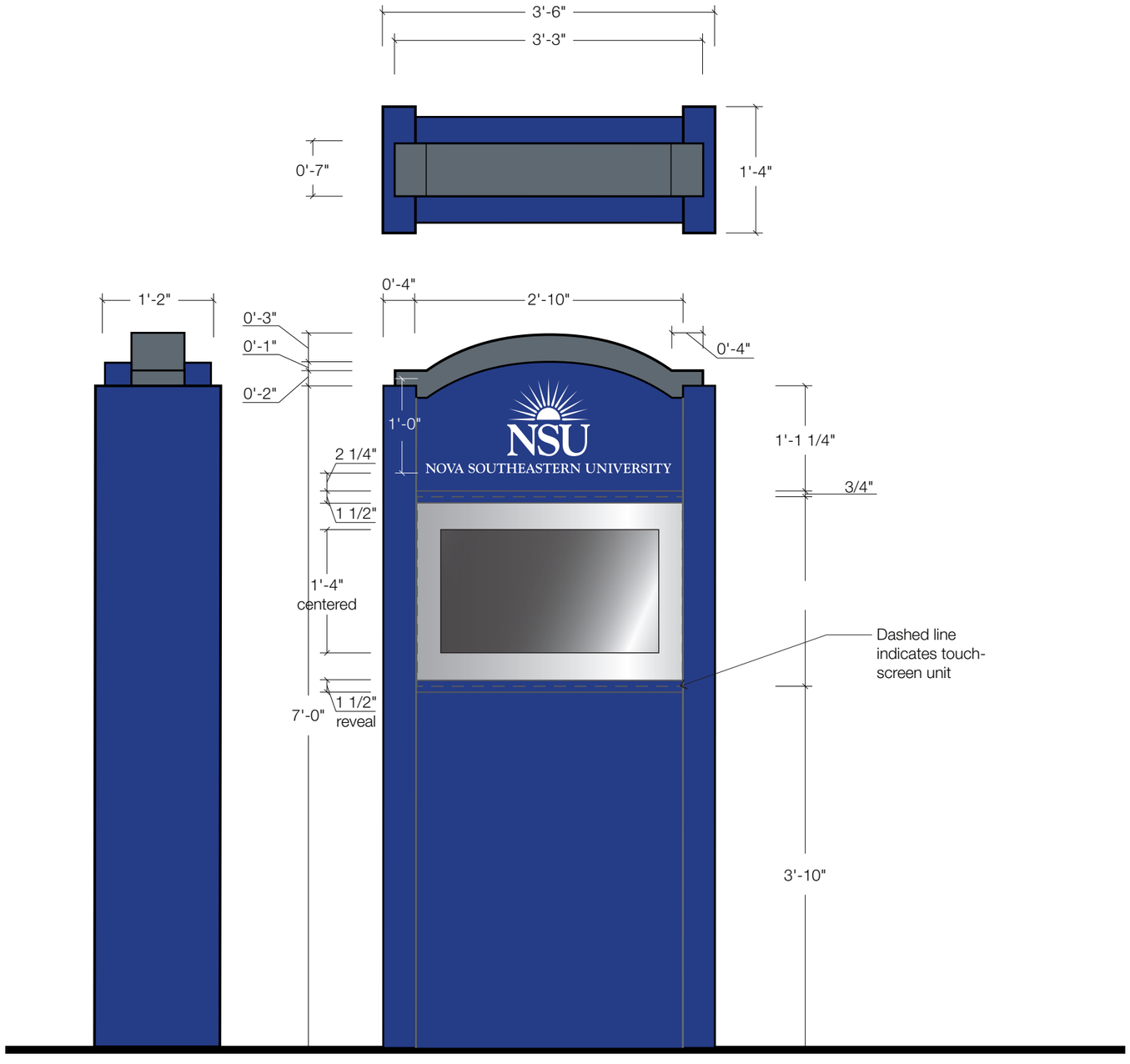
PHASE 2 SIGN (NIC)



1 Pedestrian Kiosk - LED Stand (PS1)
Plan/Elevations
SCALE: 3/4"=1'0"

Graphic Standards:

Pantone 287 C
Official Nova
Blue

Pantone 431 C
Official Nova
Gray

Brushed
Aluminum

NSU
NOVA SOUTHEASTERN UNIVERSITY

Panels:

- Header/main panel to be of 0.90 aluminum over 3" aluminum channel frame. Prime coat and finish with PMS 287 C (Official Nova Blue) acrylic polyurethane. Copy to be computer cut premium reflective white vinyl.
- Provide interior support for screen.
- Sign face to have opening that matches screen dimensions.
- Touch screen surround to be Brushed Anodized Aluminum, measuring 3.15" along top and bottom and 3.5" along sides.
- Touch screen surround to be framed by 1/2" reveal painted PMS 287 C (Official Nova Blue).
- Sign is single-sided. Provide back access to touch-screen unit, as per screen manufacturer recommendations.
- Contractor to include CAT 5 wiring to sign from University Center location as directed by owner.
- Contractor to provide CAT 5 pricing as a separate line item.
- Contractor to coordinate with touch screen manufacturer for structural and functional requirements.

Touch Screen Unit:

Vendor:	Suntronic/i-Tech Company LLC (or approved equal)
Website:	www.iTechLCD.com
Model:	GS3200LI GS32iR-MTS-U LPC 7050 W7 32" Outdoor Touch Screen IP65/IP32" Dual Touch Operation with included P.C.
Contact:	Alan Chung, iTech LCD
Phone:	1-510-226-9226 x.111
Address:	41758 Christy Street Freemont, CA 94538

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Project:
NSU Campus Monument Signage

Sheet Title:
Pedestrian Kiosk

Project Phase:

Sheet Status:
☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

Scale:

Project Number:
112059

Sheet Issue Date:
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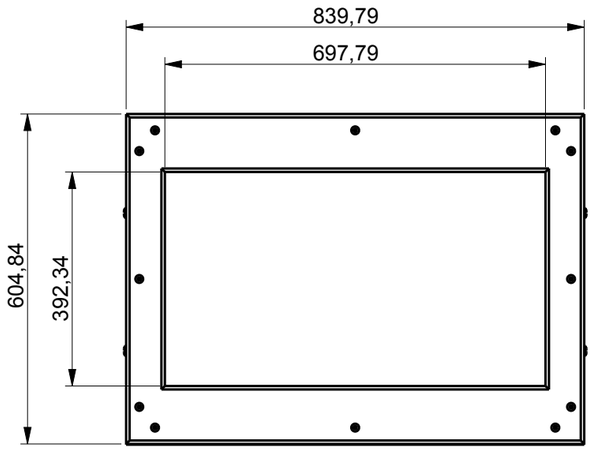
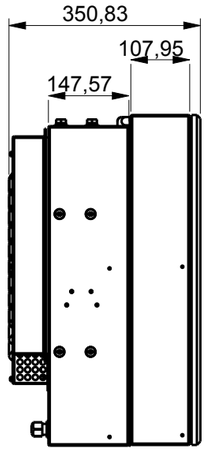
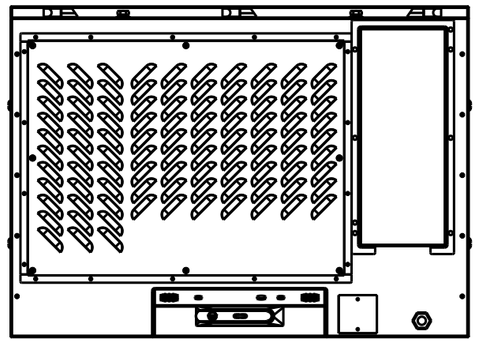
PHASE 2 SIGN (NIC)



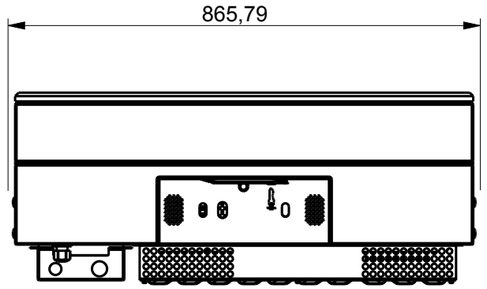
FRONT VIEW



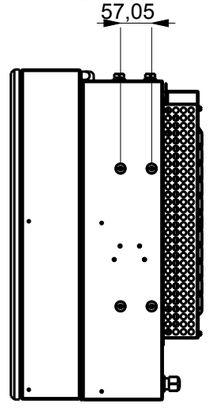
SIDE VIEW



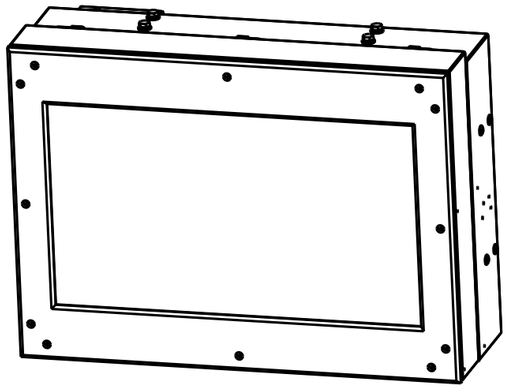
BACK VIEW

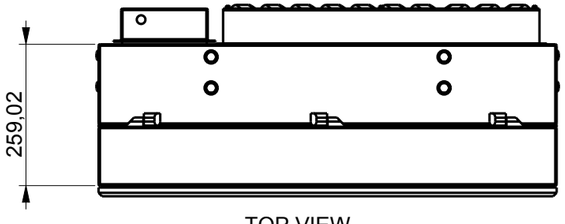


BOTTOM VIEW



SIDE VIEW





TOP VIEW

Touch Screen Unit:

Vendor:	Suntronic/i-Tech Company LLC (or approved equal)
Website:	www.iTechLCD.com
Model:	GS3200LI GS32iR-MTS-U LPC 7050 W7 32” Outdoor Touch Screen IP65/IP32” Dual Touch Operation with included P.C.
Contact:	Alan Chung, iTech LCD
Phone:	1-510-226-9226 x.111
Address:	41758 Christy Street Freemont, CA 94538

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference

Drawn by	Checked by	Approved by - date	File Name	Date	Scale
JC				6/15/12	

SUNTRONIC Outdoor LCD Signage

GS3200L

All units are in mm.

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Project:

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Sheet Title:

Touch Screen Monitor Detail

Project Phase:

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

Scale:

Project Number:

112059

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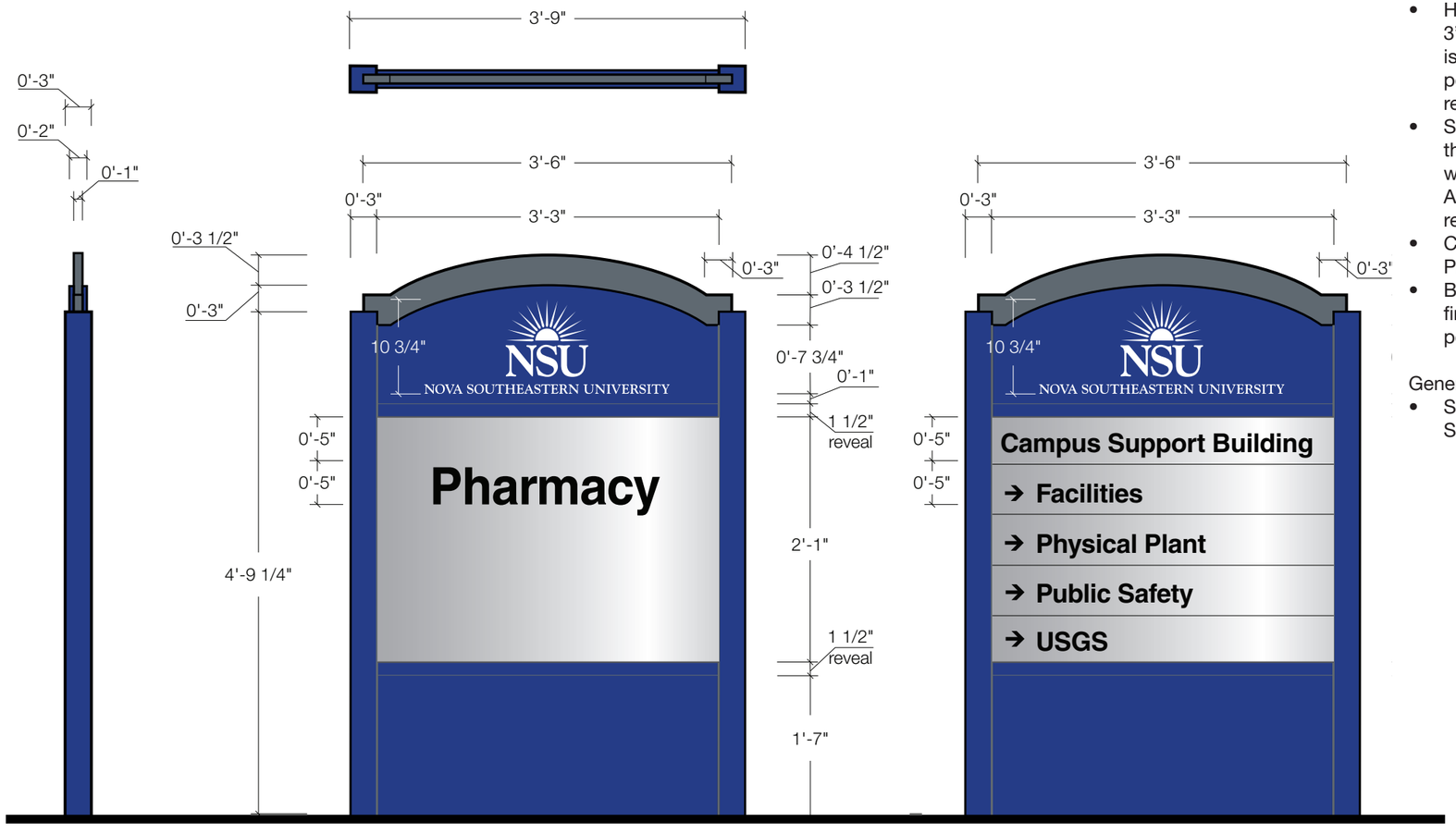
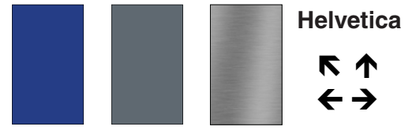


1 Facility Identity - Small Central Panel Option (FF2)
Plan/Elevations
SCALE: 3/4"=1'0"

2 Facility Identity - Small 5 Slatz Option (FF2)
Plan/Elevations
SCALE: 3/4"=1'0"

Graphic Standards:



Pantone 287 C Official Nova Blue

Pantone 431 C Official Nova Gray

Brushed Aluminum

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Panels:

- Header/main panel to be of 0.90 aluminum over 3" aluminum channel frame. Prime coat and finish with PMS 287 C (Official Nova Blue) acrylic polyurethane. Copy to be computer cut premium reflective white vinyl.
- Sign to have removable "Slatz" system panel (either 5" high panels or a 3'-3" x 2'-4" center panel), with square track and cap. Brushed Anodized Aluminum. Copy to be computer cut 7-year black reflective vinyl.
- Center panel to be framed by 1/2" reveal painted PMS 287 C (Official Nova Blue).
- Base filler panel to be of .125 plate aluminum finished PMS 287 C (Official Nova Blue) acrylic polyurethane.

General:

- Signs have both double and single-sided options. See Sign Schedule, page 17-20 for details.

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Project:

NSU Campus Monument Signage

Sheet Title:

Facility Identity Sign

Project Phase:

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

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Project Number:

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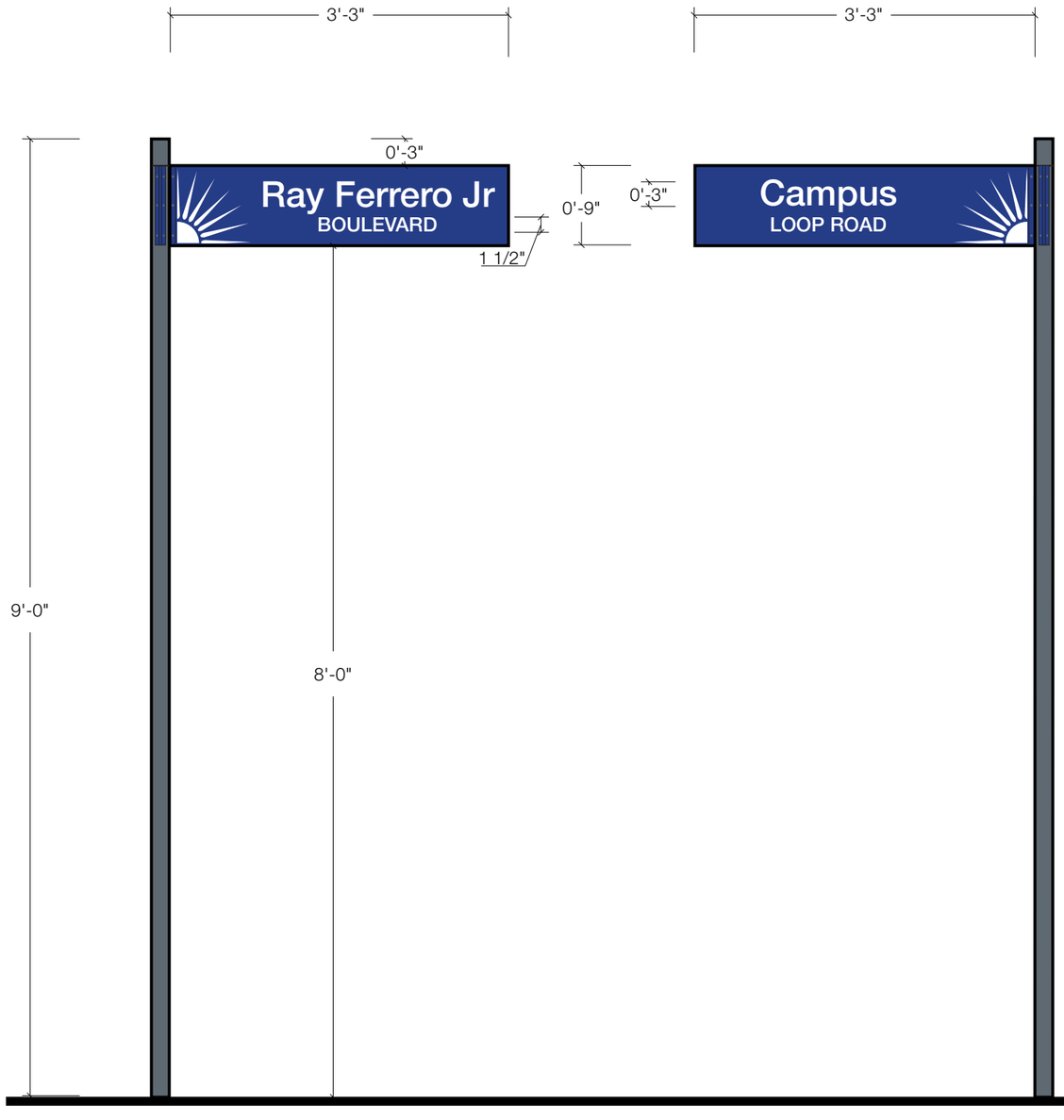
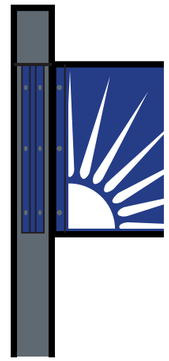
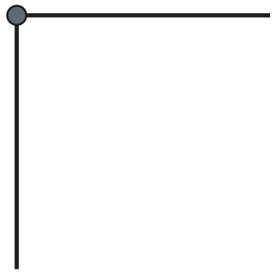


1 Roadway Signs (SS1)
Elevations
SCALE: 3/4"=1'0"



2 Roadway Signs
Detail
SCALE: 1 1/2"=1'0"



3 Roadway Signs
Plan
SCALE: 3/4"=1'0"

Graphic Standards:

Pantone 287 C
Official Nova
Blue

Pantone 431 C
Official Nova
Gray

Panels:
- 1/8" thick aluminum plate of 3'3" wide and 9" high, painted blue PMS 287 C (Official Nova Blue) with white reflective vinyl letters and logo.
- Panels to be double sided.
- Painted aluminum angle extruded for attachment of flat panel to round tube.

Post
- Clear brushed anodized aluminum tube, 3" O.D.
- Cast aluminum cap, clear brushed anodized aluminum.

General:
- Signs have single street and double street name options. See Sign Schedule, page 17-20 for details.

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Project:
NSU Campus Monument Signage

Sheet Title:
Roadway Sign

Project Phase:

Sheet Status:
☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

Scale:

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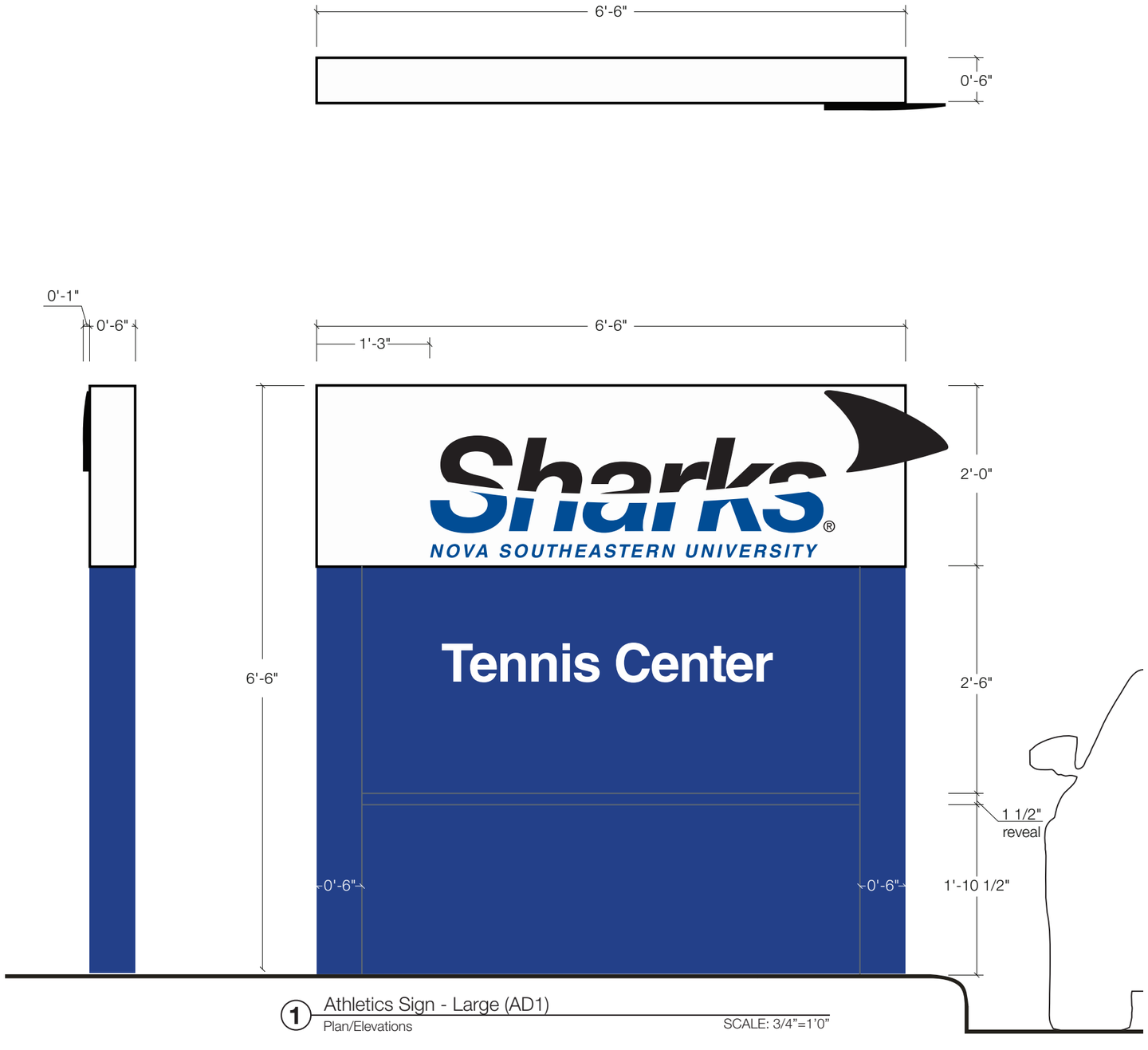

1 Athletics Sign - Large (AD1)
Plan/Elevations

SCALE: 3/4"=1'0"

Graphic Standards:

Pantone 287 C
Official Nova
Blue

Black

Helvetica

Sharks
NOVA SOUTHEASTERN UNIVERSITY

Panels:

- Header/main panel to be of 0.90 aluminum over 6" aluminum channel frame. Prime coat and finish with white acrylic polyurethane. Copy to be computer cut premium reflective black and PMS 287 C (Official Nova Blue) vinyl.
- Sign to have removable "Slatz" system panels or approved equal (either 6" high panels or a 5'-6" x 2'-6" removable center panel), with square track and cap. Prime coated and finished with PMS 287 C (Official Nova Blue) acrylic polyurethane. Copy to be computer cut white reflective vinyl.
- "Slatz" panels and base filled to be recessed by 1/2" from header and reveal.
- Base filler panel to be of .125 plate aluminum finished PMS 287 C (Official Nova Blue) acrylic polyurethane.

General:

- Signs have both double and single-sided options. See Sign Schedule, page 17-20 for details.

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Project:

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Sheet Title:

Large Athletics Sign

Project Phase:

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
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Scale:

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1 Existing Freestanding Campus Sign (T1)
Elevation SCALE: 1/2"=1'0"

Graphic Standards:

Pantone 287 C
Official Nova
Blue

NSU
NOVA SOUTHEASTERN
UNIVERSITY

Panels:
- Mount to existing supports.
- Panels to be vinyl color PMS 287 C (Official Nova Blue) to fit existing structure.

General:
- Sign to be double sided.
- Dimensions to be field-verified.

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Project:
NSU Campus Monument Signage

Sheet Title:
Existing Freestanding

Project Phase:

Sheet Status:
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☑ Bid Document-Not for Construction

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Existing

Proposed

Conceptual Banner

1 Conceptual Light Pole Banners
Photo Rendering

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Project:

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Sheet Title:

Light pole Banners

Project Phase:

Sheet Status:

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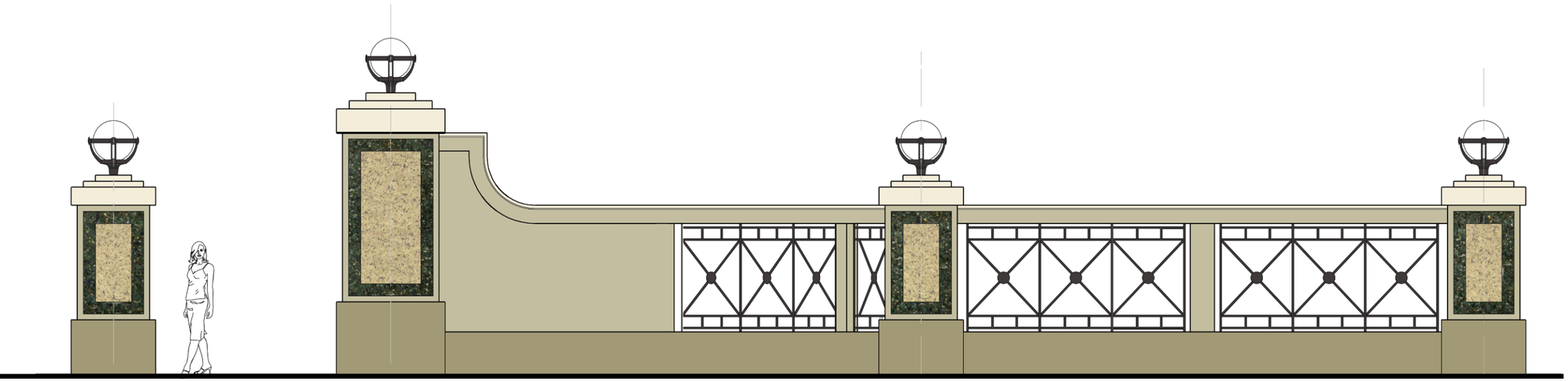
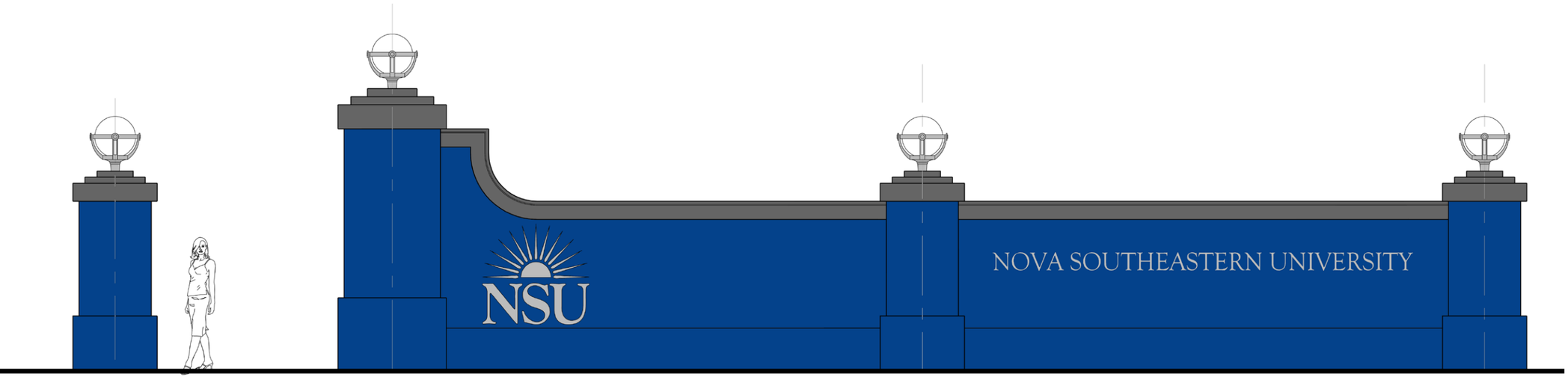


1 Campus Entry Signage - Option 1
Elevation



2 Campus Entry Signage - Option 2
Elevation

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Project:

NSU Campus Monument Signage

Sheet Title:

Entry Signage

Project Phase:

Sheet Status:

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☑ Bid Document-Not for Construction

Scale:

Project Number:

112059

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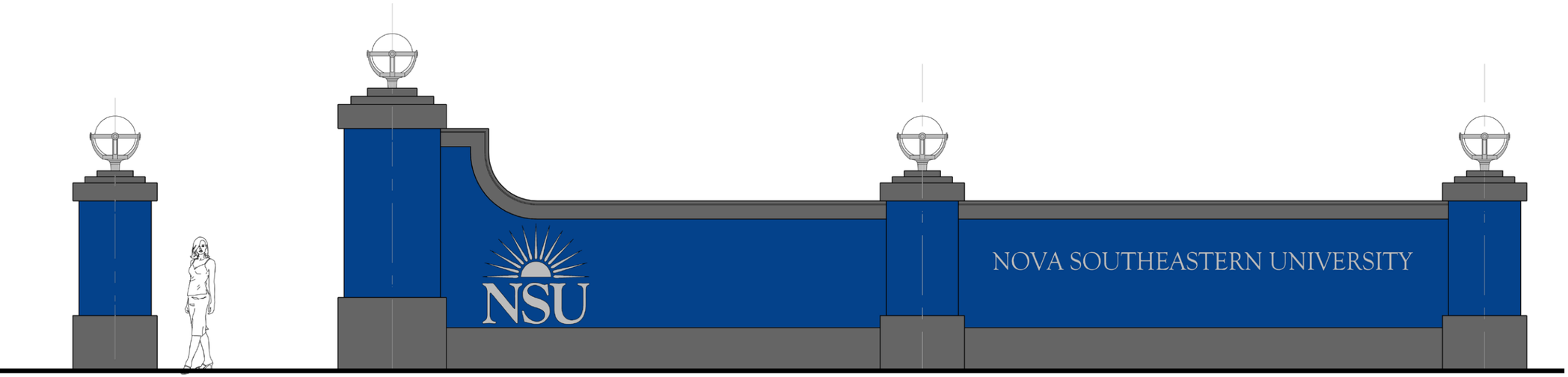
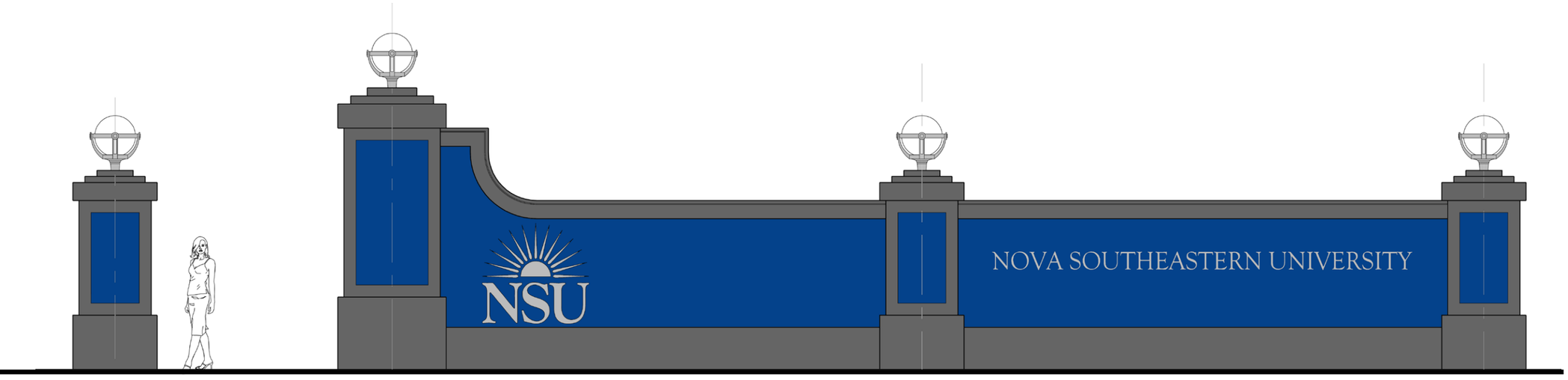


3 Campus Entry Signage - Option 3
Elevation



4 Campus Entry Signage - Option 4
Elevation

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Project:

NSU Campus Monument Signage

Sheet Title:

Entry Signage

Project Phase:

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

Scale:

Project Number:

112059

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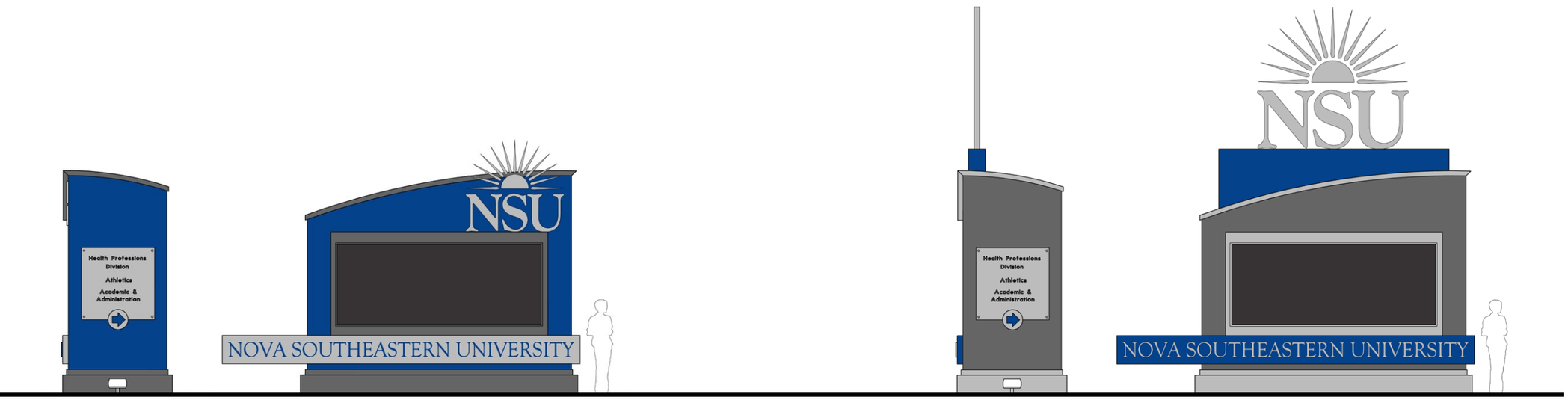

1 Media Sign - Option 1
Elevation
SCALE: 1/2”=1’0”

2 Media Sign - Option 2
Elevation

3 Media Sign - Option 3
Elevation

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Project:

NSU Campus Monument Signage

Sheet Title:

Corner Media Signs

Project Phase:

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

Scale:

Project Number:

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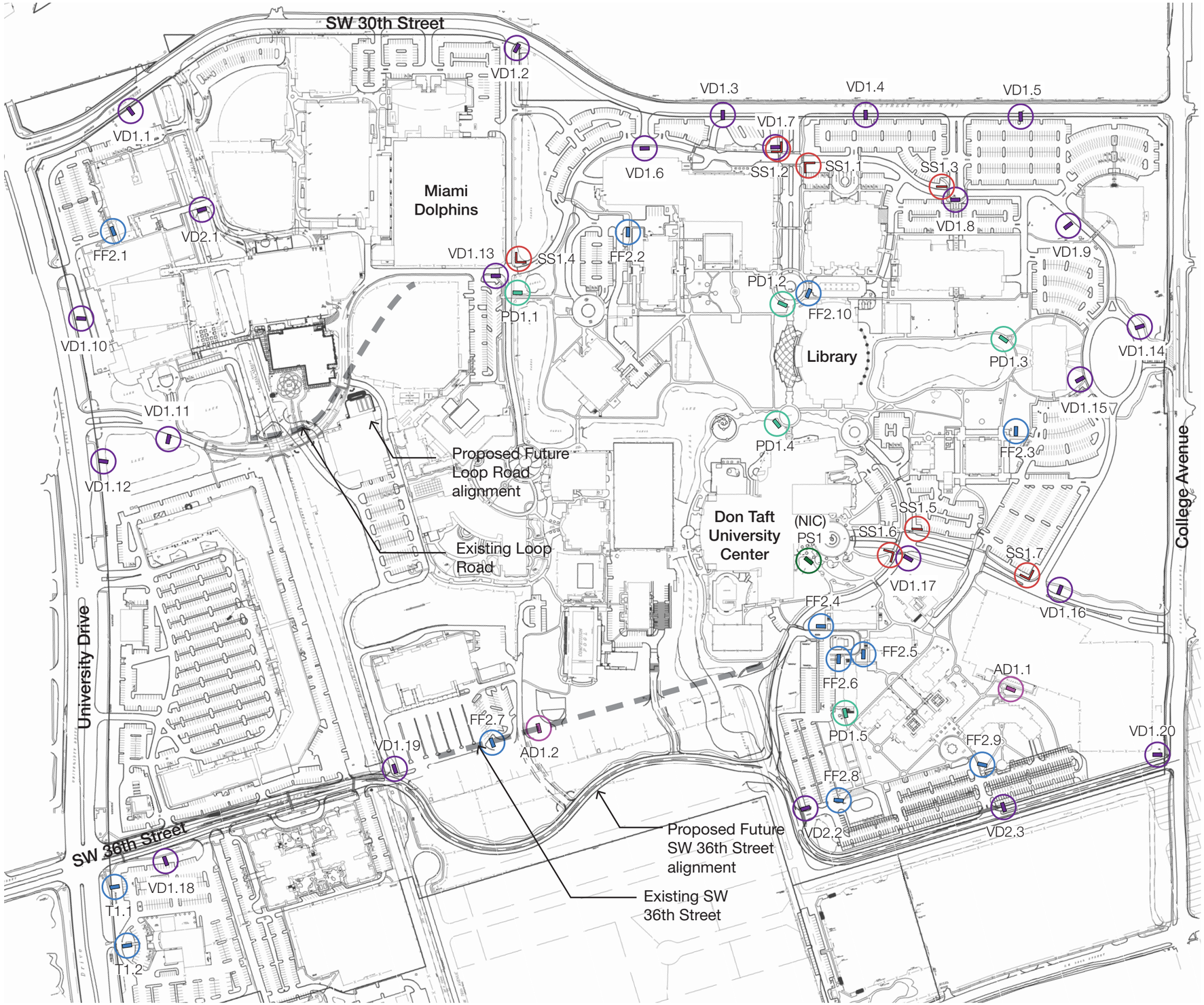

Proposed Signs

- Street Sign
- Freestanding Facility
- Campus Map Sign
- Facility Identity
- Athletics

Main NSU Campus Map - Davie, FL

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Project:

NSU Campus Monument Signage

Sheet Title:

Phasing Plan
Phase One

Project Phase:

Schematic Design

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

Scale:

Scale 1" = 400'
0 200' 400' 800'

Project Number:

112059

Sheet Issue Date:

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Proposed Signs

- Vehicular Directional Identity
- Athletics Directional

Rolling Hills Residence Hall Map - Davie, FL

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Project:

NSU Campus Monument Signage

Sheet Title:

Phasing Plan
Rolling Hills

Project Phase:

Schematic Design

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

Scale:

Scale 1” = 400’

0 200’ 400’ 800’

Project Number:

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Sign Legend

- Phase One Signs
- Phase Two Signs

Main NSU Campus Map - Davie, FL

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Project:

NSU Campus Monument Signage

Sheet Title:

Phasing Plan

Project Phase:

Schematic Design

Sheet Status:

☐ 1st Draft ☐ 2nd Draft ☐ 3rd Draft
☑ Bid Document-Not for Construction

Scale:

Scale 1” = 200’

0 100’ 200’ 400’

Project Number:

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DIVISION 11 - EQUIPMENT

11.1 General Requirements

This chapter identifies criteria for the design of specialties systems in Nova Southeastern University buildings with the purpose of establishing minimum standards to be used as a basis of design for Nova Southeastern University (NSU) Buildings at the Main Campus, Fort Lauderdale, Florida. NSU experiences with various materials, products and installations have led to the selections, products and practices noted under this Division 11. The specialties systems/products provided under this division must be selected to provide a work environment for the occupants in a sustainable and reliable design. In some cases qualitative standards are cited by name. It is the intention that the name/items(s) be incorporated in the project. In such cases Nova Southeastern University maintain "in-house" expertise, parts and maintenance stock to service the items indicated. Further, it is in the best interest of Nova Southeastern University to have consistency if only from the standpoint of sheer logistics of maintaining and supplying it many buildings.

1. Sustainable Design and products under the criteria to meet LEED "silver" standards as a minimum to reduce the total building energy consumption and improve overall efficiency.
2. Cost.
3. User Comfort.
4. Life cycle.
5. Longevity.
6. Ease Maintenance.
7. Solutions with the best value considering a life cycle cost analysis to account for total project cost.
8. Warranty.
9. Occupant Safety.

These objectives are in line with the objectives of all Divisions and should be coordinated with requirements in Division 1 Section "SUSTAINABLE DESIGN REQUIREMENTS."

Quality of the information, materials, shop drawings, reviews, equipment integrity, completeness and installation shall be a major concern of the Design Professional, as Nova Southeastern University. All specialty components indicated herein are intended for long term usage and service life for the general public designed with specific emphasis for the occupants, disabled and custodial use.

11.1.2 Submittals

Submittal shall include product data, Submittals, Shop drawings, samples and closeout submittals as defined in applicable specification sections.

11.1.3 Workmanship Requirements

Refer to specific requirements included herein.

11.2 Codes and Standards

1. Florida Building Code (FBC).
2. Florida Department of Community Affairs-Florida Accessibility Code for Building Construction (DCA).
3. American with Disabilities ACT (ACT) Accessibility Guide Lines for Building and Facilities; Architectural Barriers (ABA) Accessibility.
3. American Disabilities Act of Accessibility Guidelines (ADAAG).
4. American Society of Civil Engineers (ASCE 7).
5. National Electric Code (NEC)
6. National Fire Protection Code (NFPA)
7. Underwriters Laboratory (UL)
8. City of Fort Lauderdale, Local Codes and Ordinances.
9. Nova Southeastern University special requirements and experience with various manufacturers, products and installations have led to adopted procedures and practices incorporated into these standards.
10. Specific product manufacturer requirements.

11.3 Design Criteria

11.3.1 Specific Requirements
(Organized by CSI Master Format® 2013 Numbers & Titles)

11 05 13	Common Motor Requirements for Equipment
11 12 00	Parking Control Equipment
11 13 00	Loading Dock Equipment
11 31 00	Residential Appliances
11 40 00	Food Service Equipment
11 51 23	Library Stack System
11 52 13	Projection Screens
11 53 13	Laboratory Fume Hoods and Equipment
11 61 43	Stage Curtains
11 66 23	Gymnasium Equipment
11 66 53	Gymnasium Dividers
11 82 26	Facility Waste Compactors

11 05 13 Common Motor Requirements for Equipment

1. All features of common motors for equipment of motors, installed units, and accessory devices and features shall be compatible with the following:
   a. Motor controllers.
   b. Torque, speed and horse power requirements of the load.
   c. Ratings and characteristic of supply circuit and required control sequence.
   d. Ambient and environmental conditions of the installation location complying with manufacturer requirements.
   e. Comply with NEMA MG 1 unless otherwise indicated by the A/E.
   f. Comply with IEEE 841 for severe-duty motors.

2. Provide the following motor characteristics for common motor requirements provided to Nova Southeastern University:
   a. Duty: Continuous duty at ambient temperature of 40 deg. C and at 3300 feet above sea level criteria.
   b. Capacity and torque Characteristics should be sufficient to start, accelerate, and operate connected loads at the designated speeds, at installed altitude and environment with the designated operating sequence, and without exceeding nameplate rating or considered service factors.

3. The following common motors criteria will be are permitted to be used for Nova Southeastern University:
   a. Poly Phase Motors having the following requirements::
      1) Description NEMA MG 1, Design B, medium induction motor.
      2) Efficiency: Energy efficient, as defined in NEMA MG 1.
      3) Service factor; 1.15.
   b. Multispeed Motors: Variable Torque:
      1) For motors with 2:1 speed ratio, consequent pole, single winding.
      2) For motors with other than 2:1 speed ratio, separate winding for each speed.
   c. Multispeed Motors: separate winding for each speed.
   d. Rotor: random-wound, squirrel cage.
   e. Bearing: re-greasable, shielded, antifriction ball bearing suitable for radial and thrust loading.
   f. Temperature rise: Match insulation rating.
   g. Insulation: Class “F”, unless indicated otherwise by manufacturer.
   h. Enclosure Materials: cast iron for motor frame sizes (totally enclosed)

4. Poly Phase Motors with Additional Requirements:
   a. Motors used with reduced-voltage and multispeed controllers shall have match wiring connection requirements for controller with required motor leads. Provide terminals in motor control box, suited to control method.
   b. Motors used with variable frequency controllers as per manufacturer’s recommendations shall have the following:
      1) Windings: Copper magnet wire and moisture-resistant insulation varnish designed and tested to resistant spikes, high frequencies, and short time rise pulses produced by pulse width modulated inverters.
      2) Energy and premium-efficient motors: Class B temperature rise; Class F insulation.
      3) Inverter duty motors: Class F temperature rise; Class H insulation.
      4) Thermal protection: Comply with NEMA MG 1 requirements for thermally protected motors.

5) Severe duty motors: Comply with IEEE 841, with 1.115 minimum service factors.

5. Single Phase Motors
   a. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirement of the specific motor application:
      1) Permanent-split capacitors.
      2) Split phase.
      3) Capacitor start, inductor run.
      4) Capacitor start, capacitor run.
   b. Multispeed Moot: Variable torque, permanent-split capacitor type.
   c. Bearings: pre-lubricated, anti-friction ball bearings or sleeve bearings suitable for radial and thrust loading.
   d. Motors: 1/20 HP and smaller: shaded-pole type
   e. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal protection device shall automatically reset when motor temperature returns to normal range.

11 12 00 Parking Control Equipment

1. Nova Southeastern University shall use the following parking control systems and products for transient, merchant validated, limited date and time and valet parking.

2. Products used shall have be an automatic, communicating, aluminum barrier gate with a straight gate arm and ½ HP operators. The system shall be connected to a vehicle detector recessed and active infrared vehicle presence detectors or card reader as determined and approved by Nova Southeastern University.

3. Exit terminals shall be activated by either vehicle detector or card reader as determined and approved by Nova Southeastern University.

4. If Pay stations are to be used they shall have a standalone operation using fee computers that are nodular and PC based system for fee computer terminals and barcode ticket reader and printer.

5. Parking management software: Shall be capable of collecting data for revenue and activity reporting and for access and space control, tracking tickets, and programming parking controls equipment.

6. Access Control units:
   a. Card reader Controlled Unit: shall be a programmable, multiple code system. Using a magnetic strip card and a standalone operation that is pedestal mounted.

7. Provide manufacturer technical and upgrade service for equipment and software for two (2) years.

11 13 00 Loading Dock Equipment

1. Design Professional shall provide for each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for loading dock equipment. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

2. Provide the Nova Southeastern University for review based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency; indicate compliance of dock levelers with requirements in MH 30.1 for determining rated capacity, which is based on comprehensive testing within last two years of current products.

3. All loading dock is to be provided with scissor lifts to accommodate a variety of campus and other non-standard bed height delivery vehicles.

4. Scissor lifts should be flushed with a ground when lowered and raised to a height of approximately 4'-0" at the dock to accommodate trucks. Provide a small concrete curb in the recess in the pavement or base to reduce debris accumulation under the lift.

5. Building with greater demand for delivery needs as determined by the Nova Southeastern University, shall be provided with two bays, as well as a man door, which includes a laminated glass vision panel and is secured with an access control device. Single bay designs should also provide a man door for personnel access.

6. When a loading dock is required, a large and open weatherproof interior space shall be required for staging delivered materials with support rooms around the perimeter for other needs.

7. Provide adequate turnaround area for the appropriate standard delivery vehicles. If water compactor is located at loading dock areas refer to specific trash compactor manufacturer requirements for clearance for waste removal vehicles.

8. Provide a minimum of one (1) approximately signed service vehicle parking stall, adjacent dock area.

9. Provide for communication between the delivery person and the building's receiving staff. This can be accomplished by telephone or intercom.

10. Provide a hose bib on the dock to facilitate wash down of the dock and adjacent waste exterior areas such as compactors and waste containers are located. A trench drain will provide a means to keep the area of ponding water.

11. Provide secured and protected storage for such where biological and radioactive wastes require pick-up at the indicated location as needed and determined by Nova Southeastern University.

12. Provide secure space for cylinder storage as needed with required tie-backs.

13. Dock doors shall be at least 9'-0" wide and 12'-8" minimum on center when multiple doors are to be used. It will be responsibility of the Design Professional to verify and consider the types of delivery vehicles and product being delivered in order to determine the appropriate door type.

14. Loading docks shall be at the same elevation as a floor of the building and shall be either 44" minimum to 46" inches maximum above the adjacent pavement and shall be provided with dock leveler.

15. Loading docks must not be located at or near fresh intakes or supply air for buildings.

16. All dock levelers shall have dock levelers.

11 31 00 Residential Appliances

1. Provide washing machines and clothes dryers in food service areas, locker rooms, and vocational instructional spaces according to program requirements and the following:
   a. Residential washers and electric dryers for student use in home economics.
   b. Residential washers and gas or electric dryers for staff use in University food service and locker rooms.
   c. Stacking washers and dryers can be used as determined by Nova Southeastern University
   d. Fifty pound capacity commercial washers and gas dryers for staff use in food service and locker rooms as determined by Nova Southeastern University.
   e. Food service washers and dryers shall be on a 4 inch high raised concrete housekeeping" platform matching the finish floor material and the minimum required equipment footprint.

2. Provide gas dryers when gas is available and economically feasible, except at any home economics instructional spaces if used.

3. Dryers shall be vented to the exterior.

4. All residential appliances shall comply with Accessibility: Where residential appliances are indicated to comply with accessibility requirements comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)." And ANSI A117.1.

5. Energy Ratings: Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.

6. Provide the following appliances for residential dormitory community kitchens. As Nova Southeastern University products and vendors change occasionally please verify appliances with Nova Southeastern University requirements.
   a. Refrigerator: General Electric side-by-side with ice and water dispenser in the door (GSS22QFMWW)
   b. Wall Oven: General Electric JRP15WWWW
   c. Cook top: General Electric JP34OWCWW
   d. Recirculation Fan: General Electric JN327XWH

11 40 00 Food Service Equipment

1. General.
   a. For most facilities, the equipment lists will be in Nova Southeastern University Additional equipment or different models of the equipment listed may be required to accommodate special program requirements. Consult the Nova Southeastern University requirements for additional information and requirements.
   b. Use foam expanding agents and refrigerants not contributing to the depletion of the Earth's protective ozone layer. The use of products containing R-11, R-12, R-113, R-114, or R-115 is discouraged.
   c. Equipment and installations are required to be listed by Underwriters Laboratories (UL).
   d. Construction documents shall note the contractor to be responsible for the disconnecting and moving of equipment to designated Nova Southeastern University storage facilities or as otherwise directed at kitchen renovations involving existing equipment removals.

e. Kitchen plumbing drawings shall be coordinated with food equipment and counter layout.
f. Kitchen Floor Drains: See Division 15 for kitchen drainage requirements.
g. Use easily cleanable materials in the food service areas. Components such as "unistruts" connectors or other similar materials are not allowed.

2. Trash Compacting System
   a. Compactors will be used for dining room and facility waste instead of pulping and extractor equipment. Compactors are not-in-contract.
      1) In the dining room, locate compactor 2 feet away from a wall near the dining room exits and at least 3 feet away from the exits. If more than 1 unit in the dining room is provided, locate at remote exits.
         a) Provide quarry tile under and extending 4 feet from the sides and front of the compactor and to the rear wall. Use a quarry tile or rubber base.
         b) Walls at the unit shall be standard dining room wall finishes.
      2) If an additional compactor location is program required, locate in a staff secured space.
      3) Provide a convenient route, not through the kitchen, from the compactor to a service yard dumpster.
      4) See Division 16 - Power System Design for additional information.
   b. See approved NSU / Design professional's program requirements for compactor sizes and quantities.

3. Walk-in Cooler/Freezer
   a. Insulated cold storage rooms are prefabricated, foamed-in place, free standing walk-in rooms, designed for easy, accurate, indoor on-site assembly over a recessed slab.
   b. Refrigeration system components include a fully automatic outdoor air -cooled condensing unit ceiling mounted evaporator unit in the refrigerated room and condensate line accessory.
   c. Prefabricated floor, ceiling, and wall sections shall contain at least 4 inches of insulation minimum.
   d. Depress kitchen slab at walk-in cooler/freezer to provide equal cooler, freezer, and finish kitchen floor elevations. Depth shall include thicknesses for floor insulation, quarry tile over a galvanized steel floor, and setting bed.
   e. Stainless steel finish floor overlay panels shall be used only at a renovation project without a depressed slab.
   f. Cold storage room floors shall be designed to carry 600 pounds per square foot loading and be finished with quarry tile.
   g. Doors:
      1) The freezer door shall open into the cooler and the cooler door shall open into the kitchen.
      2) Provide vision panels in the cooler door and the freezer door.
      3) Doors shall be self-closing.
   h. Provide wet-trap floor drains for condensate.
   i. Provide at least 8'6" clear kitchen ceiling height for walk-in cooler/freezer rooms.

4. Custom Fabricated Food Service Equipment
   a. At food service areas, provide the following, but not limited to, custom stainless steel fabricated equipment including necessary accessories.
      1) Cook's table with 1 compartment sink and overhead utensil rack.
      2) Baker's table with 1 compartment sink and overhead utensil rack.
      3) Vegetable/salad sink, 3 compartments.

4) Pot washing sink, 3 compartments with overflow/scraping compartment.
5) Worktables wired for electric with outlet.
6) Pot racks, wall mounted.
7) Serving counters/bays

5. Serving Line Equipment and Units
   a. Serving line aisle widths shall be at least 42 inches wide.
   b. Stainless steel serving line equipment shall include:
      1) Milk box/Beverage Counter: Refrigerated according to program requirements. Provide floor drain near unit as needed/required.
      2) Top and Tray Slide: Counter top unit with 3 die formed inverted ridge tray slide.
      3) Hot Food Section: Dry, moist, electric, with 12 inch by 20 inch openings according to program requirements to fit standard cafeteria pans.
      4) Cold Food Section: Refrigerated frost top with a perimeter drain and refrigerated storage below with adjustable shelves.
      5) Protector Cases: Plexiglass front and ends installed over hot food section. Display Cases: 18 inch wide unit with plexiglass shelves and sneeze guards.
      7) Cashiers Stand: With footrest, cash drawer, and electrical and data connections routed to underside of cabinet base.
   c. Interior/exterior serving bays shall include:
      1) A serving counter at least 9'0" long with utility space for hot/cold equipment according to program requirements.
      2) Under counter electrical for mobile units and drop-in counter top equipment.
      3) Under counter shelving.
      4) Point-of-sale (POS) station with electrical and data connections routed to underside of cabinet base.
      5) Roll-thru refrigerated and heated units.
   d. Fronts, soffits, and walls of serving lines shall be designed with decorative themed colors and tile. If tile is not used on fronts and sides, edges must be finished with stainless steel angle.

6. Food Preparation, Holding and Dispensing Equipment
   a. Food preparation equipment includes, but is not limited to:
      1) Floor mounted 60 quart mixer with a power bowl lift, bowl and beater accessories. (See Nova Southeastern University for specific requirements)
      2) Ice Maker Daily Production Capacities:
         a) Facility shall have a minimum: 1,000 lbs.
      3) Mobile Can Storage and Dispenser Racks.
      4) Stationary Can Storage and Dispenser Racks.
      5) Inclined Can Rack

7. Cooking Equipment
   a. Cooking equipment for food service shall include, but not limited to the following:
      1) Double stacked convection ovens with porcelain steel liners, stainless steel doors with glass panels and stainless steel front, left side, right side, top and back panels.
      2) Convection steamer with filtration equipment at boiler.
      3) Steam Kettle: Stainless steel unit, gas fired, complete with hot and cold water and filter system.
      4) Tilting/braising pan located according to program requirements.
      5) Hoodless fryer located according to program requirements.
      6) Deep fry combination with fryer drains cabinet and built-in filter system.

7) Electric heavy-duty 2 burner range with polished stainless steel cabinet base, 6 inch stainless steel legs and adjustable bullet feet.
8) Roll-thru refrigerated units.
9) Roll-thru heated unit

b. Cooking equipment for Instructional Food Lab Commercial Cooking Center:
1) Convection Oven: Stainless steel.
2) Deep fat fryer with adjustable legs.
3) Griddle with adjustable legs for mounting.
4) Convection Steam Cooker with in-line water conditioner and legs for mounting.

8. Food Service Shelving
a. Selection, quantity, and sizes of shelving shall be decided by Nova Southeastern University, program requirements, and configuration of specific project floor plans.
b. Shelving shall be freestanding, unless indicated as mobile.
c. Install first shelf 10 inches above finish floor with remaining shelves equally spaced.
d. Dry Storage Shelving:
1) Bright chrome finishes open-wire shelving or smooth polypropylene with steel core posts and traverses.
2) Minimum weight bearing of 400 pounds at corners and 600 to 800 pounds on straight shelving.
3) Shelving shall be guaranteed against rust.
4) Shelf widths shall be between 18 to 24 inches by length to fit individual plan.
5) Stationary shelving shall be 5 tier high with a post height of 74 inches.
6) Mobile shelving shall be 4 tier high with a post height of 63 inches, high density stem type casters with at least 2 casters having brakes.

9. Cold Storage and Freezer Shelving:
a. High density polymer or polypropylene construction.
b. Units shall be easy to clean, guaranteed against rust, able to withstand -35 degree F temperatures.
c. Shelving shall be attached to posts marked with 1 to 4 inch increments.
d. Shelf widths shall be between 20 to 24 inches by length to fit individual plan.
e. Capacity of corner shelves shall be at least 400 pounds and straight shelves shall have a capacity of at least 600 pounds.

10. Pot Pan Shelving shall be standard bright stainless steel open-grid shelving with stainless steel posts.
a. Shelving and posts shall be non-corrosive and guaranteed against rust.
b. Shelf widths shall be 18, 21, or 24 inches by length to suit the project.
c. Stationary shelving shall be 5 tier high with a post height of 74 inches.
d. Mobile shelving shall be 4 tier high with a post height of 63 inches.
e. Casters shall be high density stem type with at least 2 casters having brakes.

11. Quality of materials, shop drawing reviews, equipment integrity, and installation shall be a major concern, as Nova Southeastern University does not normally receive replacements for as long as thirty years.

12. Building construction quality in food storage, preparation, and serving areas is extremely important. Eliminate gaps between building materials allowing pests access through floors, walls, or roofs.

13. Equipment and its installation shall be UL listed, if applicable.

14. Installers, service personnel, and contractors for new or existing equipment with refrigerant use shall comply with Environmental Protection Agency (EPA) regulations regarding technician certification and recycling/recovery equipment. See Division 15.

11 51 23 Library Stack Systems

Verify with Nova Southeastern University requirements.

11 52 13 Projection Screens

1. Screen sizes are dependent on room size and orientation. Design professional shall consult Nova Southeastern University prior to selection and installation. When possible NSU OIIT will substitute the projector and screen setup with one or multiple televisions (70", 80" or 90") in size.

   Typical instructional space projection screens shall be as follows:
   a. Screen sizes are dependent on room size and orientation. Design professional shall consult Nova Southeastern University prior to selection and installation.
   b. Basis of Design Manufacturer: Draper, Inc. manufacturered of a durable, matt white, fireproof, viewing surface.
   c. Projection screens shall be manually operated.
   d. Projection screens shall be wall mounted and not attached to instructional boards. Locate as high as possible to allow bottom edge of projection screen to reach chalk/marker trough of instructional board. Coordinate location of clocks, speakers, robes, and audible alarms.
   e. Standard Classroom Configurations (20-40 sets)-screen size should be 109" diagonal with a screen aspect ratio of 16:10.
   f. Large Classroom Configurations (45-60 seats)-screen size should be 123" diagonal with a screen aspect ratio of 16:10.

2. Stage Screen sizes are dependent on stage size and orientation. Design professional shall consult Nova Southeastern University prior to selection and installation. The size of screen can also be used for large auditoriums (or theater) style seating rooms.

   Stage movie screens shall be as follows:
   a. Sizes will vary between 165" – 189" diagonal of a durable, matt white, fireproof, viewing surface.
   b. Screen aspect ratio of 16:10.
   c. Stage movie screens shall be electrically operated roll-down.
   d. Locate directly behind the house curtain, concealed from view in roll-up position, centered on the stage.
   e. Nova Southeastern University requires that the Design professional review, evaluate and coordinate elevation and installation height in order to avoid shadows on the projection screen caused by the height and location of existing light fixtures.
   f. Portable and easy to set-up large stage screens are acceptable as long as all the necessary accessories for set-up, storage and transportation are provided.

11 53 13 Laboratory Fume Hoods and Equipment

1. Please contact the Nova Southeastern University for specific equipment and casework requirements. Select equipment and casework according to program requirements.

2. Provide certified performance test reports of materials, equipment, and testing procedures by an independent commercial testing laboratory of the following equipment.
   a. Safety cabinets
   b. Bio-safety cabinets
   b. Fume hoods
   c. Instructor demonstration tables
   d. Science tables
   e. Work tops
   f. Sink and cup drains
   g. Mechanical service fittings

3. Laboratory casework, accepted by Nova Southeastern University, shall be provided by one laboratory furniture company.

4. Accessible components shall have a forward approach for accessibility. A parallel wheelchair approach for side access is not acceptable. See accessibility codes for clearances and allowable heights.

5. Faucets, student centers, and other equipment require prior Nova Southeastern University acceptance. F. A combined vandal resistant cold water/gas faucet shall be used in science laboratory student sinks and work stations.

6. Provide tamperproof fasteners and fittings on equipment.

7. Use vacuum breaker fittings on gas, water, or water related items.

8. Laboratory sinks and cup drains shall be black, epoxy resin.

9. Laboratory casework includes, but not limited to:
   a. Tables and Worktops:
      1) Tops designed to contain spills and provide solid epoxy resin tops and sinks.

      Cabinets:
      2) Provide a clear oak or other clear wood exterior and concealed plywood construction.
      3) Flake board, particleboard, and other types of wood composition board are not allowed.
      4) Display cabinets shall have sliding wood framed doors with safety glass. Swinging glass doors are not allowed.
      5) Provide locks at doors and drawers according to program requirements. Locks within a room shall be keyed alike.

10. Laboratory equipment includes, but not limited to, the following:
    a. Student Stations:
       1) Specify with steel support structure and solid epoxy resin tops and sinks.
       2) Accessible student stations shall have a forward approach for accessibility. A parallel wheelchair approach for side access is not acceptable. See accessibility codes for clearances and allowable heights.

b. Fume Hoods:
   1) Provide a forward approach for accessibility, supplemental air hood, epoxy resin work surface, natural gas, cold water, epoxy resin cup sink, acid waste, electricity, and vapor-proof light based on program requirements.
   2) Fume hoods shall comply with SAMA, ASHRAE, NFPA, and other applicable codes.
   3) Fume hoods shall be located within the laboratory to allow unimpeded exit in case of a fire or explosion within the fume hood. Locate hoods away from paths of egress.
   4) Provide uni-facial and bifacial fume hoods according to program requirements. Fume hood selection will decide room layout due to access requirements of each fume hood type.
   5) Locate fume hoods away from high traffic areas and provide sufficient aisle space for access.
   6) Safety devices such as drench shower/eye wash stations and fire extinguishers shall be near the fume hood. Locate a floor drain at each drench shower/eye wash station.
   7) Fume hood exhaust system shall be coordinated with the room emergency exhaust system and the supplemental outside air supply, and not interconnected with other ventilation duct systems when controlled via EMS/BAS venture air valves shall be used.
   8) Locate emergency exhaust fan switch within 15 feet of the instructor's desk and on the primary egress path.
   9) When the emergency exhaust fan is turned on:
      a) Fume hood exhaust fans shall remain in operation.
      b) According to NFPA, fume hood supply fans shall automatically shut down.
   10) Locate hoods to avoid cross currents and air turbulence at fume hood face due to ventilating inlets or high traffic.
   11) At instructor designated fume hoods and at chemistry labs, provide for normal laboratory usage with an average face velocity of 100 fpm and a minimum at any one point of 80 fpm.
   12) At Science Classrooms where fume hoods are indicated for use provide for low toxicity usage with an average face velocity of 75-80 fpm and a minimum at any one point of 50-60 fpm.
   13) Fume hood design shall allow for safe and efficient operation during normal laboratory conditions within acceptable specified tolerances when connected to an exhaust system.
   14) Dead air pockets and reverse air currents are not allowed along surface of hood interiors.
   15) Exhaust and supply system shall be roof mounted with vertical discharge stack on exhaust blower.
   16) Required airflow shall be achieved when adjustable baffles are at full-open position.
   17) Vision panels shall be safety glass. Polycarbonates, such as "Lexan", are not allowed for glazing materials at view panels.

c. Safety Components:
   1) Provide safety cabinets with an emergency shower, eyewash fountain that shall operate hands-free, and storage space for first aid kit, fire blankets, fire extinguisher, and sand bucket. The safety cabinet shall be ADA accessible, easily reached from all areas of the lab, and away from egress paths.

2) An emergency shower shall have a pull valve and pull cord to be held under the shower to wash away chemical contamination. Locate a floor drain at the emergency shower.
3) Eye wash fittings shall have push type flag valves and soft stream heads capable of hands-free operations.
4) Provide 6 foot long rubber drench hoses and hose spray fittings for deck mounting at instructor demo desk and according to program requirements.

11 61 43 Stage Curtains

1. See Nova Southeastern University specific program requirements for specific curtains at auditoriums, cafeterias, language arts labs, and CCTV production rooms.

2. Curtain fabrics shall be inherently flame resistant according to FBC Code stage requirements and NFPA requirements. A sewn-on permanent label shall name the manufacturer and state the fabric is non-combustible.

3. Provide a minimum of 50 percent additional fullness and box pleats. Provide double bottom hems, canvas chain pocket, and chains at full-length curtains.

4. Provide heavy-duty steel tracks and battens with support assemblies not exceeding 6'0" on center.

5. Provide a pipe grid the full-length of the proscenium opening plus 5'0" at each side as shown in Nova Southeastern University Appendix - Stage Drawings. The pipe grid shall be at 4 feet on center for hanging the longitudinal battens for the curtain tracks and lighting. F. Stage curtains shall include:
   a. House (Grand) Curtain:
      1) Center bi-parting curtain with manual pulley operation, hung 8 inches behind the front hard wall for the full-length of proscenium opening plus 3'0" at each side.
      2) Two-way traversing, heavy-duty, steel track and accessories.
      3) Polyester velour fabric of a solid color or other accepted color.
   b. House Valance:
      1) Stationary valance designed to conceal the house curtain tracks and lighting pipes. Hang 4 inches behind the front hard wall and extend 18 to 24 inches below and 6 inches above the proscenium for the full-length of proscenium opening plus 1'6" at each side.
      2) Polyester velour fabric the same color as the house curtain.
      3) Specific NSU School initials or monogram may be sewn on the valance.
   c. Leg Curtains:
      1) Black polyester fabric, full-length curtains on stationary battens.
      2) 6'0" length with 2'0" on stage and 4'0" off stage.
   d. Border Curtains:
      1) Black polyester fabric curtains on stationary battens located in front of leg curtains.
      2) Provide border curtains with an overall height as the house valance for the full-length of the proscenium opening plus 6'0" at each side.
   e. Travelers:
      1) Black polyester fabric, full-length, center bi-parting curtain with manual pulley operation.

2) Stack stage right and left with 2'0" remaining on stage.

f. Back wall Curtain:
1) Black polyester fabric, full-length, center bi-parting curtain with manual pulley operation.
2) Full-length proscenium opening plus 4'0" at each side.

g. Back wall Valance:
1) Black polyester fabric valance on a stationary batten.
2) Provide back wall valance with an overall height as the house valance for the full-length of the proscenium opening plus 4'0" at each side.

h. Cyclorama:
1) Light blue polyester fabric suitable for theater light projection.

The house valance for the full-length of the proscenium opening plus 4'0" at each side.

11 66 23 Gymnasium Equipment

Verify with Nova Southeastern University requirements.

11 66 53 Gymnasium Dividers

Verify with Nova Southeastern University requirements.

11 82 26 Facility Waste Compactors

1. Compactor use must be approved by owner prior to specifying.

2. Operational Theory
   a. The waste compactor is served by wheeled “mini-dumpsters” towed behind a powered utility vehicle. The waste compactor’s hydraulically operated forklift arms pick up each mini-dumpster and dump into a receiving bin for trash compaction.
   b. The outside dimension of the wheeled “mini-dumpster” is 7’-8”. Pedestrian walkways and roads shall be designed with this feature in mind, taking into consideration that each individual building must be accessed and serviced by these “mini-dumpsters”.
   c. The forklift end of the waste compactor is the same end that is picked up by the delivery truck making the opposite end the end that gets emptied. Consideration shall also be given to providing circulation for the towed mini-dumpster and allowing proper access to the compactor. Exact placement within the service yard, adequate screening and site circulation shall accommodate these features.

3. Location
   a. Waste compactors shall be located within service yards and placed proximal to kitchens and custodial receiving areas.
   b. Provide minimum of 50’ unobstructed, straight-in approach to face of dumpster.

4. Site screening option
   a. If deemed necessary due to location of service yard with respect to surrounding neighborhood, an 8’ high reinforced concrete block wall may be placed around the waste compactor.

b. Minimum inside dimensions shall be 12’ wide x 32’ long. Place concrete filled steel pipe bollards around inside perimeter to protect inside of block walls.

5. Pad Construction
   a. Provide 12’ wide x 32’ long x 6” thick, concrete pad for waste compactor.
   b. Pad shall be constructed of 3000 psi concrete reinforced with #3’s spaced at 12” each way on compacted granular base.

6. Approach Apron
   a. Provide 16’ wide x 10’ deep x 6” thick, 3000 psi concrete slab approach apron reinforced with #3’s, spaced at 12” each way on compacted granular base.
   b. Paint diagonal striping on apron with yellow traffic marking paint and label “NO PARKING ZONE” as indicated.

7. Protection
   a. Protect enclosure and dumpsters with 8’ long x 6”Ø steel pipe bollards filled with concrete. Bollards shall be embedded in 3’ deep x 12’Ø concrete footing. See drawing for quantity and location.

8. Utilities
   a. Water: Provide hose bib in adjacent vicinity. Ensure water drains to area catch basin.
   b. Electrical: Provide 60A, 3 Phase 230-V service.

9. Collection Vehicle Data
   a. Roadways shall be designed for refuse trucks weighing 20 tons.
   b. Trucks are 40 – 50’ in length, depending on manufacturer, and require a 76’ turning radius measured to the outside front wheel.

END OF DIVISION 11.

DIVISION 12 FURNISHINGS

12.1 General Requirements

This chapter identifies criteria for the design of specialties systems in Nova Southeastern University buildings with the purpose of establishing minimum standards to be used as a basis of design for Nova Southeastern University (NSU) Buildings at the Main Campus, Fort Lauderdale, Florida. NSU experiences with various materials, products and installations have led to the selections, products and practices noted under this Division 12. The specialties systems/products provided under this division must be selected to provide a work environment for the occupants in a sustainable and reliable design. In some cases qualitative standards are cited by name. It is the intention that the name/items(s) be incorporated in the project. In such cases Nova Southeastern University maintain "in-house" expertise, parts and maintenance stock to service the items indicated. Further, it is in the best interest of Nova Southeastern University to have consistency if only from the standpoint of sheer logistics of maintaining and supplying it many buildings.

The specialties system products must be designed to comply with the following objectives:

1. Sustainable Design and products under the criteria to meet LEED "silver" standards as a minimum to reduce the total building energy consumption.
2. Longevity.
3. Users comfort.
4. Easy of maintenance.
5. Compatibility with all adjacent materials both new and existing.
6. Solutions with the best value considering a life cycle cost analysis to account for total project cost.
7. Occupant Safety

These objectives are in line with the objectives of all Divisions and should be coordinated with requirements in Division 1 Section "SUSTAINABLE DESIGN REQUIREMENTS."

Quality of the information, materials, shop drawings, reviews, equipment integrity, completeness and installation shall be a major concern. All specialty components are intended for long term usage for the general public designed with specific emphasis for the occupants, disabled and custodial use.

12.1.1 Submittals

Submittals shall include product data, samples, mock-ups, sustainability data, shop drawings, coordination drawings, and maintenance materials submittals.

12.1.2 Workmanship requirements

Refer to specific requirements included herein.

12.2 Codes & Standards

1. Florida Building Code.
2. Fort Lauderdale City Code and local codes

12.3 Design Criteria

Refer to specific requirements included herein.

12.4 Specific Requirements (organized by CSI Master Format® 2013 Numbers & Titles).

12 21 13	Horizontal Louver Blinds
12 24 13	Mesh Shade Roller Window Shades
12 36 40	Stone Countertops
12 36 61	Simulated Stone Countertops
12 48 16	Entrance Floor Grilles
12 61 00	Fixed Audience Seating
12 93 13	Site Furnishings

12 21 13 Horizontal Louver Blinds

Design Standards

General
This section addresses the requirements for manually operated horizontal louver blinds.

1. Use of motorized blinds must be approved by the Nova Southeastern University Facilities Design and Construction Department.

2. Slats must be aluminum (those with recycled content preferred).

3. Perforated slats are not acceptable.

4. A single neutral color per building shall be selected from manufacturer's standards.

5. Approved Manufacturers: Hunter Douglas Contract, Levelor Contract, Springs Window Fashions.

Performance Standards

1. Fabrication must comply with WCMA A100.1.
2. Nominal slat thickness shall be no less than 0.008 in.
3. Slat width shall be 1 inch, with 20 mm tape spacing.
4. Headrail shall be equal to Hunter Douglas CD80 integrated headrail system.
5. Lifetime Warranty required.
6. Blinds shall be installed level and plumb in accordance with the manufacturer's written instructions. The installer shall ensure unencumbered operation of window sash hardware.

12 24 13 Mesh Shade Roller Window Shades

Design Standards

General
This section provides general guidelines for manually operated woven mesh roller window shades.

1. Use of motorized shades must be approved by the Nova Southeastern University Facilities Design and Construction Department.

2. Approved Product: MechoShades/5 Manual Drive System manufactured by MechoShade Systems, Inc. System. Mecho Slimline not approved for use.

3. Approved Dealer/Installer: Verify with Nova Southeastern University.

4. Shade band and material shall be light-filtering, woven stain and fade resistant fabric. Opaque fabrics are not approved.

5. Approved shadeband material: Mechoshade Thermoveil 0900, 1300 and 1500 series. These series contain PVC but currently perform better than the non-PVC EcoVeil option. Only one color per building shall be specified.
   a Selection of openness factor should be determined based upon the window orientation and room use. Various degrees of openness may be required in a building. A general guideline for selection is as follows:
      (1) 5% openness for general purpose
      (2) 1-3% for rooms requiring room darkening
      (3) 3% for windows with west orientation
   b. Darker colors will provide a better view and light control.
   c. The Design Professional shall provide large shadeband samples for approval prior to specification.
   d. Up the bolt shadeband orientation is preferred.

6. Shades shall be flush, overhead mounted with an aluminum fascia or installed in a pocket with a bottom closure panel. Drywall pockets are preferred.

7. Unless required by window condition, the direction of shadeband roller shall be regular, from back of roller to keep the shade close to the window.

8. Indicate all required blocking the contract documents.

Performance Standards

1, Woven mesh shades shall comply with the following requirements.
   a. Roller shades shall be fabricated to comply with WCMA A 100.1.
   b. Shadeband material shall comply with NPFA 701.

2. Installer shall verify all field dimensions; install shades level and plumb, in accordance with the manufacturer's written instructions; and ensure unencumbered operation of window sash hardware. Metal parts of shade units shall be isolated from concrete mortar to prevent galvanic action.

3. Drawings and specifications shall provide the location and size of the window to receive shades or blinds and details of installation, such as wall-mounted within jambs, surface-mounted, ceiling-mounted, and mounted within pockets or behind valances.

4. Provide the following details:
   a. Details of shade assembly mounting details, including wiring diagrams for motorized systems
   b. Position of shades or blinds in relationship to glass or frame surface
   c. Special conditions at external and internal corners
   d. Elevations of special installation situations
   e. Finish (indicated on schedule)
   f. Type of shade and/or blinds operation and location of controls

5. Shop drawings shall show locations and size of shades, installation details, elevations indicating division between shade units, and location of shade pulls.

12 36 40 Stone Countertops

Design Standards

General this section provides guidelines for the use of granite countertops and backsplashes. Marble is not permitted without Nova Southeastern University approval.

1. Granite surfaces must have factory polished finish; slight pitting is unacceptable.

2. Samples from actual slab shall be provided to Nova Southeastern University for approval.

3. Stone must be obtained from a single quarry source.

4. Joint locations must be indicated on drawings. Avoid mitered joints and joints located near cutouts.

5. Continuous support must be provided under countertop. A subtop, made of a sturdy material such as plywood, sized to limit deflection to not more than 1/720 of the span, is the preferred form of support. Where cabinets are not used for support, framing must be provided and must also be rigid enough to limit deflection to no more than 1/720 of the span.

Performance Standards

1. Material must comply with ASTM C 615.

2. Use Water-Cleanable Epoxy Adhesive that complies with ANSI A118.3 and has a VOC content of 65 g/L or less.

3. Use Water-Cleanable Epoxy Grout that complies ANSI A118.3, chemical-resistant, water-cleanable, tile-setting and -grouting epoxy.

4. Specify colorless stain-resistant sealer as recommended by stone producer.

12 36 61 Simulated Stone Countertops

Design Standards

General: This section provides general guidelines for solid surface material and quartz agglomerate countertops and backsplashes.

1. Simulated stone countertops and backsplashes are acceptable for use for general use conditions including toilet room countertops and window sills. For installations where excessive heat, chemicals, sharp knives or tools will be used verify manufacturer's warranty before proceeding with selection.

2. Use of integral sinks requires approval from Nova Southeastern University.

3. Consider products with recycled content such as Avonite Surfaces Recycled Collection.

4. Products that need to be sealed to prevent staining are not acceptable.

5. Use of solid wood edges and trim is not acceptable.

6. Color selection should be neutral.

7. Specify polished finishes for quartz agglomerate as warranties may not apply to products with honed finishes. Honed finishes require more daily maintenance and are not appropriate for high traffic areas.

Performance Standards

1. Simulated stone materials selected must comply with ANSI SS1.

2. Composite wood and agrifiber products must be made without the use of urea-formaldehyde binders or adhesives.

3. Wood materials used in fabrication must be FSC certified.

12 48 16 Entrance Floor Grilles

Design Standards

General: This Section includes the guidelines for the design and materials selection of entrance floor mats and frames and/or entrance floor grilles and frames of the following types:

1. Recessed floor mats or recessed floor grille, including drain pan fabricated from aluminum or stainless steel.

2. Straight grille pattern is preferred.

3. Joints in floor gratings/mats are not permitted unless dimensions exceed maximum available length. Request from fabricator that dimensions exceeding available sized and requiring joints

must be approved by Design Professional and Nova Southeastern University before fabrication. Try to design within available sizes.

Product Standards

1. Approved Products:
   a. Exterior Application: (suggestion) Stainless steel grille with stainless steel frame made of 85% post consumer stainless steel; 1/8 o.c. wire spacing; hidden lockdowns. 1-1/8 inch deep grid. Approved Manufacturer: Construction Specialties GridlLine G6 or KD Kadee Industries Kadee 98.
   b. Interior Application: Nova Southeastern University. Please select desired options from manufacturer.

2. Fasteners: Fabricated from stainless steel.

Performance Standards

1. Drawings must show locations and recesses in concrete slab for installation of floor mats/grilles.

2. Exterior installation must show drain pan.

3. The installer shall have at least a five-year documented experience in projects of the same size and type.

4. Submittals:
   a. The Design Professional shall request shop drawings showing layout and types of floor mat and frames, full-scale sections of typical installations, details of patterns or designs, anchors, and accessories. Submittals, Shop drawings to include joints, if required.
   b. The Design Professional shall coordinate shop drawing submittal with concrete work submittal shop drawings showing oversized recess for deferred installation of frames.
   c. The Architect shall request samples for initial selection purposes in form of manufacturer's color charts consisting of actual sections of floor mat and frame materials, showing full range of colors, textures, finishes, and patterns available, for each type of floor mat and frame indicated. Request sample of joints if applicable.

12 61 00 Fixed Audience Seating

Design Standards

General: This section provides guidelines for upholstered fixed assembly seating for auditoriums and lecture halls. It also includes lecture hall tables furnished as part of seating installation.

1. Fixed auditorium seating layouts shall indicate number of seats, aisle widths, accessible aisle seats, wheelchair and companion seat locations, armrest locations, and other options as required by program.

2. Lecture hall seating layouts shall indicate number of seats and fixed tables, aisle widths, wheelchair clearance at tables, back to back clearance of tables and other options as required by program.

3. Fixed seating shall provide all seated people with a clear unobstructed view to the front of the theatre. The need for a tier or raked floor shall be determined by the Design Professional and Nova Southeastern University.

4. Fixed seating should be secured and fixed to the floor. Rail mounted systems are not acceptable.

5. In auditoriums each seating row should be offset or staggered by one-half width to improve visibility.

6. Seating layouts shall optimize space utilization. Center aisles should be avoided, as the best viewing seats will be lost. The location of aisles shall be determined not only by sightline considerations but also by the requirements for good access both between the rows and to and from the room. Cross aisles to provide better student access to seating is highly desirable.

7. Lecture halls shall have fixed continuous tables with modesty panels. The need for modular power and data systems shall be determined by Nova Southeastern University. The type of chair (either movable or fixed) is to be determined on a project by project basis.

8. Accessible fixed tables should be supplied with stackable chairs so stations may be used as regular seating when not in use by individuals using wheelchairs.

9. Provide mock-up sample of all products for Nova Southeastern University approval.

Product Standards

1. Selection of fixed seating and tables shall take into account durability, ease of maintenance/part replacement, and ergonomic features.

2. Specify single-source responsibilities. Obtain seating, accessories, mounting components, including layout, field dimensions, and installation, coordination responsibilities from a single manufacturer. US-made products preferred.

3. All specified seating products must have a demonstrated history in a similar institutional setting for a minimum of 15 years.

4. Manufacturer must have a sustainability program in place and meet the requirements of IEQ 4.4 and IEQ 4.5. Products that contribute to Materials and Resource credits are preferred.

5. Fixed auditorium seating components shall be ADA compliant and selected from the manufacturers standard product options and shall include:
   a. Floor mounted one-piece cast iron standards
   b. Steel inner back, padded upholstered outer plastic back with ergonomic support
   c. Plastic armrests
   d. Decorative end panel over durable core at aisles
   e. Painted steel seat bottom, upholstered molded polyurethane seat cushion with serpentine springs. Self-rising seat mechanism.
   f. Multiple seat and back width options.
   g. Clear aisle space with folding tablet arms must meet Life Safety code NFPA 101

h. The folding tablet arm support mechanism shall be robust and require minimum maintenance. The tablet surface will have a durable laminated writing surface, on a hardwood plywood core, with rounded edges. 10% must be mounted on the left hand side of aisle seats. Size of tablet to be determined on a per project basis.
i. Use of seat numbers and other options shall be determined by the Design Professional and Nova Southeastern University.
j. Fabrics for upholstered seating must be carefully chosen for suitability in terms of appearance and durability. Fabrics must be commercial upholstery grade, with a minimum of 100,000 double rubs, Wyzenbeek method, and approved by the manufacturer for the intended purpose. Selected fabrics shall be stain resistant. Special care should be taken by the seat manufacturer to ensure that the fabric can be treated with a stain resistant compound and that the treatment is compatible with the permanent adhesive bonding of padding materials.

6. Fixed tables shall be ADA compliant and selected from the manufacturers standard product options and shall include:
   a. Tables are to be custom manufactured to the specific room size for each project. Multiple table configurations must be offered.
   b. Epoxy powder coat painted metal legs with steel floor attachment plate.
   c. Table top shall be 1-1/4" thick consisting of a 45 lb/cu ft density particle board core to which a .050" high pressure laminate has been bonded to the top surface with a .050" backing sheet bonded to the bottom surface for a balanced construction. Composite wood products must be made without urea formaldehyde.
   d. Table end corners shall have radius edges.
   e. Table edges shall be 3mm polypropylene adhered to the edge with permanent heat cured adhesive.
   f. Wood spline and tight joint fasteners shall be used to join adjacent table surfaces forming a continuous table top.
   g. Modesty panels shall be specified; chair support, aisle end panels, power and data units and other options shall be specified if requested by Nova Southeastern University.

7. Acceptable Manufacturers:
   a. American Seating Col.
   b. Hussey Mfg. Co.
   c. Irwin

Performance Standards

1. Seating products must be manufactured to comply with ASTM F 851 and BIFMA X5.4.

2. Fire-Test- Response Characteristics of Upholstered Chairs:
   a. Fabric: Class 1 according to DOC CS 191-1953 or 16 CFR 1610, tested according to California Technical Bulletin 117.
   b. Padding: Comply with California Technical Bulletin 117.
   c. Full-Scale Fire Test: Comply with California Technical Bulletin 133.

3. Comply with ADA –ABA Accessibility Guideline, Life Safety NFPA 101, Florida Building Code or International Building Code (whichever is more stringent) for accessibility, aisle and egress requirements.

4. Comply with recommendations of seating manufacturer for secure and proper installation.

5. Install chairs using manufacturer's recommended hardware and fasteners. Chairs in curved rows shall be installed at a smooth radius.

6. Mounting bolts and assembly hardware shall be cut, capped and/or otherwise finished to achieve both a finished appearance to the installation and eliminate protrusions and sharp edges which could cut and tear.

12 93 13 Site Furnishings

Design Standards

1. Refer to Nova Southeastern University Standards for layout and installation requirements.

2. Rack location and minimum count per project LEED requirement.

Product Standards

Recommended Bike Rack: Bola, Landscape forms.

Performance Standards

All standard units made from ASTM A53/A500 SCHD 40 steel pipe (2.375"OD x .154 wall), hydraulically bent with a mandrel, hot-dipped galvanized after fabrication.

END OF DIVISION 12

DIVISION 13 SPECIAL CONSTRUCTIONS

13.1 General Requirements

This chapter identifies criteria for the design of specialties systems in Nova Southeastern University buildings with the purpose of establishing minimum standards to be used as a basis of design for Nova Southeastern University (NSU) Buildings at the Main Campus, Fort Lauderdale, Florida. NSU experiences with various materials, products and installations have led to the selections, products and practices noted under this Division 13. The specialties systems/products provided under this division must be selected to provide a work environment for the occupants in a sustainable and reliable design. In some cases qualitative standards are cited by name. It is the intention that the name/items(s) be incorporated in the project. In such cases Nova Southeastern University maintain "in-house" expertise, parts and maintenance stock to service the items indicated. Further, it is in the best interest of Nova Southeastern University to have consistency if only from the standpoint of sheer logistics of maintaining and supplying it many buildings.

The specialties system products must be designed to comply with the following objectives:

1. Sustainable Design and products under the criteria to meet LEED "silver" standards as a minimum to reduce the total building energy consumption.
2. Life Cycle
3. Longevity.
4. Aesthetics
4. Users comfort.
5. Easy of maintenance.
6. Maintenance.
7. Warranty.
6. Compatibility with all adjacent materials both new and existing.
7. Solutions with the best value considering a life cycle cost analysis to account for total project cost.
8. Occupant Safety

These objectives are in line with the objectives of all Divisions and should be coordinated with requirements in Division 1 Section "SUSTAINABLE DESIGN REQUIREMENTS."

Quality of the information, materials, shop drawings, reviews, equipment integrity, completeness and installation shall be a major concern. All specialty components are intended for long term usage for the general public designed with specific emphasis for the occupants, disabled and custodial use.

13.1.2 Submittals

Submittal shall include product data, Green Sustainable (LEEDS) Submittals, Shop drawings, samples and closeout submittals as defined in applicable specification sections.

13.2 Code and Standards

1. Florida Building Code (FBC)
2. National Fire Protection Code (NFPA)
3. Underwriter's Laboratory (UL)
4. American Society of Civil Engineers (ASCE / SEI 7).
5. American with Disabilities Act and Accessibility Guidelines (ADA).
6. Specific product manufacturer requirements
7. City of Fort Lauderdale Ordinances, Zoning and Architectural Requirements

13.3 Design Criteria

Refer to specific requirements under each section included herein.

13.4 Specific Requirements (Organized by CSI Master Format® 2013 Numbers & Titles)

13 24 16	Saunas
13 27 00	Vaults

13 24 16 Sauna

Design Standards

Modular Saunas & Precut Saunas
These sections provide general guidelines and recommendations for the specific applications.

1. Field Conditions
   a. Environmental Limitations: Do not install saunas until building is enclosed, wet work in spaces is complete and dry, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
   b. Field Measurements: Verify all openings and dimensions for precut saunas by field measurements before fabrication and indicate complete measurements on Shop Drawings.
   c. Locate any concealed framing, blocking, and reinforcements that support precut saunas by field measurements before being enclosed and indicate measurements on Shop Drawings.

2. Warranty
   a. Provide and specify a five (5) year warranty from the date of substantial completion of the project in which the manufacturer agrees to repair or replace components of sauna heaters that fail in materials or workmanship within specified warranty period that includes heating

elements, controls and safety mechanisms. Also include deterioration of corrosion of metals or metal finishes.

3. Green Sustainable (LEEDS) Submittals and LEED Submittals (When Required):
   a. Certificates for Credit MR 7: Chain-of-custody certificates indicating that wood and wood-based products comply with forest certification requirements. Include documentation that manufacturer is certified for chain of custody by an FSC-accredited certification body. Include statement indicating cost for each certified wood product.

   b. Product Data for Credit EQ 4.4: For composite wood products, documentation indicating that product contains no urea formaldehyde.

   c. Laboratory Test Reports for Credit EQ 4: For composite wood products, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

4. Sauna System Description(s)
   a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   b. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC, the manufacturer, or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

5. Modular Saunas
   a. Provide manufacturer's standard demountable, panelized system complete with framing, insulation, vapor retarders, pre-hung door, and trim; designed to be freestanding.
   b. Framing: 2-by-2-inch-nominal kiln-dried, Douglas fir.
   c. Insulation: 3-1/2-inch fiberglass batt with integral foil face or with separate foil vapor retarder.
   d. Interior Wall and Ceiling Paneling: 1-by-4-inch-nominal V-joint, tongue-and-groove wood boards of species and grade indicated; sanded smooth; kiln dried to no more than 12 percent moisture content.
      1) Wood Species: White Aspen (no knots).
   e. Exterior Wall Finish: 11/32-inch thick, grade B lumber or rough-sawn mahogany hardwood plywood prepared to receive gypsum board and owner indicated wall finish if so requested.
   f. Flooring: Manufacturer's standard removable 1-by-4-inch-nominal wood duckboards, of same species as interior paneling, spaced not more than 1/2 inch apart and mounted on preservative-pressure-treated wood sleepers.
   e. Wood Doors: Manufacturer's standard prehung door assembly as follows:
      1) Door Wood Species: Same wood species as interior paneling.
      2) Jamb, Casing, and Threshold Wood Species: Same wood species as interior paneling.
      3) Size: 36 by 80 inches.
      4) Glass Vision Panel: Insulating-glass unit made from two lites of 3-mm-thick, clear, tempered float glass with 1/4-inch airspace.

a) Provide decorative etched glass door panel showing Nova Southeastern University logo.

5) Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that do not contain urea formaldehyde.

6) Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

7) All-Glass Doors (optional): Manufacturer's standard prehung door assembly of 8-mm-thick, clear, tempered float glass; mounted on 2-inch thick same wood species as interior paneling for jambs and head.
   a) Provide decorative etched glass door panel showing Nova Southeastern University logo.
   b) Size: 36 by 80 inches.

8) Door Hardware: Provide one pair of brass butt hinges, one self-closing brass center hinge and two wood door pulls of same wood species as interior paneling for each door.

9) Sidelights: Insulating-glass units made from two lites of 3-mm-thick, clear, tempered float glass with 1/4-inch airspace. Provide jamb and casing of same wood species as interior paneling.

10) Benches: Fabricate from S4S, 1-by-4-inch-nominal wood, spaced not more than 1/2 inch apart and supported by 2-by-4-inch-nominal wood framing; of same wood species as interior paneling.

11) Base and Trim: Same wood species as interior paneling.

6. Precut Saunas
   a. Provide manufacturer's standard precut components, vapor retarder, prehung door, and trim; designed for installation over existing framing.
   b. Interior Wall and Ceiling Paneling: 1-by-4-inch-nominal, V-joint, tongue-and-groove wood boards of species and grade indicated; sanded smooth; kiln dried to no more than 12 percent moisture content.
      1) Wood Species: White Aspen (no knots).
   c. Wood Doors: Manufacturer's standard prehung door assembly as follows:
      1) Door Wood Species: Same wood species as interior paneling.
      2) Jamb, Casing, and Threshold Wood Species: Same wood species as interior paneling.
      3) Size: 36 by 80 inches.
      4) Glass Vision Panel: Insulating-glass unit made from 2 lites of 3-mm-thick, clear, tempered float glass with 1/4-inch airspace.
         a) Provide decorative etched glass door panel showing Nova Southeastern University logo.
      5) Materials: Fabricate doors with adhesives and composite wood products that do not contain urea formaldehyde.
      6) Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing

of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

d. All-Glass Doors: Manufacturer's standard prehung door assembly of 8-mm-thick, clear, tempered float glass; mounted on 2-inch thick jambs and head.
   1) Provide decorative etched glass door panel showing Nova Southeastern University Logo.
   2) Size: 36 by 80 inches.

e. Door Hardware: Provide one pair of brass butt hinges, one self-closing brass center hinge and two wood door pulls of same wood species as interior paneling for each door.

f. Sidelights: Insulating-glass units made from two lites of 3-mm-thick, bronze-tinted, tempered float glass with 1/4-inch airspace. Provide jamb and casing of same wood species as interior paneling.

g. Benches: Fabricate from S4S, 1-by-4-inch-nominal wood, spaced not more than 1/2 inch apart and supported by 2-by-4-inch-nominal wood framing; of same wood species as interior paneling.

h. Base and Trim: Same wood species as interior paneling.

7. Heaters and Controls

a. Sauna Heater: Manufacturer's standard electric convection unit with stainless-steel elements, stainless-steel interior, stainless-steel exterior, and wire protective top grill. Provide heat-tested, shatter-resistant igneous rocks that are in direct contact with and completely cover heating-unit coils.
   1) Capacity: Determined by manufacturer for sauna size indicated.
   2) Power Supply: 120 or 208 or 240-V ac depending on availability.
   3) Mounting: Wall mounted with bracket or Corner mounted with bracket or Floor mounted with integral floor stand or legs subject to manufacturer recommendations and the intended application.
   4) Built-in Mechanical Controls: Manufacturer's standard system mounted integral with heater unit, with thermostat that will limit room temperature to 194 F. degrees and the following features:
      a) Dial timer that automatically shuts off heater after 60 minutes.
      b) Dial time-delay that allows heater to be preset up to nine hours in advance.
   5) Remote Mechanical Controls: Manufacturer's standard system designed for recessed wall mounting, with thermostat and the following features:
      a) Heater switch
      b) Light switch
      c) Heat-indicator light
      d) Adjustable temperature control
      e) Dial timer that automatically shuts off heater after 60 minutes.

8. Materials

a. Certified Wood: Saunas fabricated with wood and wood-based materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

b. Wood Species and Grades: Provide lumber of grades indicated according to DOC PS 20 and the ALSC National Grading Rule provisions of the grading agency indicated.

1) White Aspen: WCLIB or WWPA; Clear Heart.
2) Redwood: RIS; Clear All Heart, VG (Vertical Grain).
3) Douglas Fir: WCLIB or WWPA; Superior, VG (Vertical Grain).
4) Western Hemlock: WCLIB or WWPA; B & BTR - 1 & 2 Clear, VG (Vertical Grain).
5) Alaska Yellow Cedar: WCLIB or WWPA; B & BTR - 1 & 2 Clear.

c. Softwood Plywood: DOC PS 1.
d. Hardwood Plywood: HPVA HP-1 made with adhesive containing no urea formaldehyde.
e. Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated), Type I (transparent glass, flat), Quality Q3 (glazing select), Class 1 clear.
f. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspaced, qualified according to ASTM E 2190, and complying with other requirements specified.
g. Fasteners: Stainless steel or hot-dip galvanized.
h. Vapor Retarder: Laminated aluminum foil and kraft-paper vapor barrier with water-vapor transmission rate of no more than as tested according to ASTM E 96/E 96M.

9. Accessories
   a. Provide the following accessories are to be implemented into the design. Provide wood accessories of same wood species as interior paneling unless otherwise indicated.
   b. Signage should be incorporated into the unit to serve as a warning constructed in the approved materials shall be mechanically attached to the sauna room on the outside stating that:
   Warning: do not exceed 30 minutes in sauna. Excessive exposure can be harmful to health. Any person with poor health should consult a physician before entering sauna.

10. Fabrication
   a. Fabrication and installation of Saunas shall consider the following fabrication method within this building standard:
   b. Fabricate saunas to dimensions, profiles, and details indicated. Sand boards smooth and ease edges to a radius of not less than 1/16 inch
   c. Nail or screw and glue bench components together from bottom side.
   d. Countersink or conceal all metal fasteners.
   e. Secure glass in wood frames with removable stops.
   f. Flush mount junction boxes for heater, control panel, and light fixtures with concealed connecting electrical conduit in modular sauna panels.

13 27 00 Vaults

Design Standards

This section provides general guidelines and recommendations for the specific applications: for factory-formed and field-assembled, modular vault panels and vault doors.

1. Submittals

Delegated-Design Submittal: In addition to the specification section submittal requirements. The additional submittal requirements are to be included for installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

2. Delivery, Storage, and Handling
   a. Deliver modular vault doors wrapped and crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
   b. Deliver keys to Nova Southeastern University by registered mail or overnight package service.
   c. Environmental Limitations: Do not deliver or install modular vaults until spaces are enclosed and weather tight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
   d. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

3. Materials
   a. Steel Plate, Shapes, and Bars: ASTM A 36/A 36M
   b. Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B
   c. Stainless-Steel Sheet: ASTM A 666, Type 304
   d. Aluminum Extruded Bar and Tube: ASTM B 221
   e. Aluminum Plate and Sheet: ASTM B 209
   f. No shrink Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout; noncorrosive; no staining; mixed with water to consistency suitable for application and 30-minute working time.

4. Modular Security Vault Panel
   a. General: Listed and labeled for burglary resistance according to UL 608.
      Burglary Classification: Class M, 15 minutes net working time.
   b. Concrete Vault Panels: Modular, interlocking, precast, reinforced, concrete panels with integral penetrations for sprinklers; conduits for power, signal, and communication systems; and ventilating ports. Factory prime paint-exposed surfaces of metal pan.
   c. Panel Connections: Fabricate vault panels with cast-in steel connection plates.
   d. Ventilating Ports: Comply with UL 680; with same burglary classification as vault walls; located as indicated on Drawings. Fabricate ports integral with special wall panel.

5. Modular Fire Vault Panels
   a. Insulated Panels: Fabricated from ceramic insulation in expanded metal frame; with galvanized-steel sheet vapor barrier on inside vault wall panel face and ceramic insulation gaskets for between-panel connections; with integral penetrations for sprinklers; conduits for power, signal, and communication systems; and ventilating ports.
      1) Rating: Class 125, 2 hour(s).
   b. Standard: Comply with NFPA 232, "Protection of Records."

6. Vault Door and Frame Assemblies
   a. Security Vault Door Assembly: Comply with UL 608; listed and labeled for burglary resistance; with same burglary classification as vault walls.
      1) Clear Opening Size: 36 inches wide by 78 inches high.
   b. Vault Door: Fabricated from all-welded, insulated steel sheet construction thickness as required for rating; with jambs and head shaped to interlock with frame; with full-height, stainless-steel locking bars that engage vertical jambs; with emergency vault ventilator.
      1) Cladding: Manufacturer's standard stainless-steel sheet for hinge cover and door and frame surfaces with stainless-steel finish.
      2) Provide the following factory-installed features:
         a) Door contact alarm device
         b) Heat detector
         c) Emergency vault ventilator complying with UL 680, with same burglary classification as vault door.
         d) Pass-through port
         e) Automatic mechanism that prevents accidental lock-in
   c. Frame: Beveled entrance frame, tapered no more than 10 degrees, fabricated from stainless-steel sheet of thickness required by UL listing; with removable rear architrave and adjustable wall flange to accommodate wall thicknesses indicated, fabricated to match frame material and finish.
      1) Security Door Frame: Designed for grouted installation.
   d. Emergency Vault Ventilators: Comply with UL 680; with same burglary classification as vault walls.

7. Vault Door Hardware and Accessories
   a. General: Provide hardware components as required for specified UL listing.
   b. Hinges: No fewer than three roller-thrust-bearing hinges of design, size, and weight required for smooth operation of door and to allow full, clear door opening; with hinge cover(s).
   c. Door Bolts: Permanently lubricated, not less than 11/16 inches in diameter, and fabricated from nickel-plated steel. On each vertical side of door, provide five door bolts that engage frame when extended. Bolts shall automatically retract when handle is operated and automatically extend when door closes.
   d. Handle: Manufacturer's standard
   e. Combination Locks for Security Door: Dual-control, UL 768, Group 2, three-tumbler, key change, mechanical type, capable of no fewer than one million possible combinations; with UL 887 listed, three-movement, 144-hour time lock; equipped with UL 140 relocking device that automatically locks bolt when lock is subjected to mechanical attack.
      Provide drill-resistant metal plate for protection of lock case and locking mechanism.
   f. Relocking Devices: UL 140 listed, designed to automatically lock door bolts when vault door is subjected to mechanical or torch attack.
   g. Escape Mechanisms: Provide emergency operation of lock from vault side of vault door by means of inside door release fabricated from stainless-steel rod.
   h. Door Closer: Automatic, with electromagnetic system and sensor that releases door on detection of heat or smoke; with 180-degree, hold-open position.
   i. Sills: Reinforced, formed stainless-steel plate.
   j. Door Stop: Tube length style.

k. Trim: Stainless steel, chromium-plated steel, or other trim standard with vault door manufacturer.

l. Day Gates: Manufacturer's standard gate; full width of door opening and designed to restrict entry through modular vault door; with piano-type or self-closing gravity hinges that swing gate into room.
   1) Locks: Equip gates with cylinder-type lock, controlled by key on no secure side and by knob on secure side.
   2) Stainless-Steel Gates: Round or square, vertical, stainless-steel bar grille; with manufacturer's standard finish.
   3) Aluminum Gates: Round or square, vertical, aluminum bar grille; with clear anodic finish.

m. Fabricate modular vault panels and vault doors to work as an integrated system that complies with burglary classification indicated.

n. Fabricate vault panels from materials and of size, thickness, and perimeter profile required for a complete vault system that complies with UL listing. Design, Engineer, and fabricate supplemental structural members as required for spans indicated.
   1) Security Vault Panels: Factory prepared with cutouts and pipe sleeves for communication, and signal wiring penetrations.

8. Paint Finishes
   a. Finish: Manufacturer's standard factory-applied, baked-on paint finish applied to door, frame, and wall flanges.
   b. Color and Gloss: As selected by Architect from manufacturer's full range.

9. Installation
   a. Concrete Vault Panels: Connect adjoining vault wall panels by bolting interior, adjoining cast-in plates as required by manufacturer.
      1) Five-Sided Construction: Connect vault wall panels to supporting slab by welding continuous 1-1/2-by-1-1/2-inch steel angle to cast-in steel plate in wall panels and bolting to supporting slab.
      2) Connect vault wall panels to vault ceiling panels and to each other at vertical corners by welding continuous 1-1/2-by-1-1/2-inch steel angles to cast-in steel plates in wall panels.
   b. Lightweight, Metal-Clad Laminated Vault Panels: Connect adjoining vault wall panels by bolting interior side and vertical corners of adjoining panels, as required by manufacturer.
      1) Five-Sided Construction: Connect vault wall panels to supporting slab by welding continuous 1-1/2-by-1-1/2-inch steel angle to wall panels and bolting angle to supporting slab.
      2) Connect vault wall panels to vault ceiling panels at vertical corners by welding.
   c. Install modular vaults according to manufacturer's written instructions for clearance between exterior of vault panels and other construction.
   d. After vault is installed, grout perimeter of vault recess flush with top of slab.

10. Demonstration
   a. Engage a factory-authorized service representative to train Nova Southeastern University maintenance personnel to adjust, operate, and maintain modular vault doors.

END OF DIVISION 13

DIVISION 14 CONVEYING EQUIPMENT

14.1 General Requirements

This chapter identifies criteria for the design of conveying systems in Nova Southeastern University buildings with the purpose of establishing minimum standards to be used as a basis of design for Nova Southeastern University (NSU) Buildings at the Main Campus, Fort Lauderdale, Florida. NSU experiences with various materials, products and installations have led to the selections, products and practices noted under this Division 14. The conveying systems/products provided under this division must be selected to provide a work environment for the occupants in a sustainable and reliable design. In some cases qualitative standards are cited by name. It is the intention that the name/items(s) be incorporated in the project. In such cases Nova Southeastern University maintain “in-house” expertise, parts and maintenance stock to service the items indicated. Further, it is in the best interest of Nova Southeastern University to have consistency if only from the standpoint of sheer logistics of maintaining and supplying it many buildings.

The conveying system products must be designed to comply with the following objectives:

1. Sustainable Design and products under the criteria to meet LEED “silver” standards as a minimum to reduce the total building energy consumption.
2. Reflectivity for energy conservation.
3. Longevity.
4. Users Comfort.
5. Occupant Safety.
5. Easy of maintenance.
6. Compatibility with all adjacent materials both new and existing.
7. Solutions with the best value considering a life cycle cost analysis to account for total project cost.

These objectives are in line with the objectives of all Divisions and should be coordinated with requirements in Division 1 Section “SUSTAINABLE DESIGN REQUIREMENTS.”

Quality of materials, shop drawings, reviews, equipment integrity and installation shall be a major concern. All conveying equipment systems are intended long term usage for the general public with elevators designed with specific emphasis for the disabled, furniture and equipment transportation and custodial use.

Wheel chair lifts and stairway chair lifts shall not be used in new construction.

When the program requires using conveying equipment specifically elevators of all types the elevator speed, size and other requirements shall be determined by an elevator manufacturer’s traffic analysis.

All elevator or conveying system drawings and specifications will be reviewed inspected, and permitted by the Elevator Inspections Division of the Broward County Building and Zoning Department according to the Bureau of Elevators of the Department of Business Regulations State of Florida.

For elevators openings that face one another, the minimum width between entrances shall no less than 10'-0". Elements that create queues, such as exhibit, directories, etc., shall not be placed in elevator lobbies.

Provide or upgrade, as required, elevator controllers, necessary equipment and connections to comply with recall and fire service requirements at projects with elevator ADA upgrades, a fire replacement fire alarm system, or an upgrade fire alarm system. A simple expansion of the system or adding devices zones will not require recall and for service compliance modifications.

The Nova Southeastern University, Design and Specification Standards for the most part, govern new construction criteria. It is understood by NSU that requirements cannot always be met on all renovations / modernizations projects. Where new equipment is required and provided the applicable standard will apply. Where it is cost effective or required to retain existing equipment standards and criteria, said equipment shall be brought up to current code compliance standard and in like new condition.

All equipment must be maintainable by current industry trained elevator mechanics and technicians. Acceptance of new technologies will only be considered by NSU in conjunction with an intensive formal training program conducted by the equipment manufacture installer. Training shall perform in parallel that provide to the installers/ technicians and shall include both classroom and field (hands-on) instruction.

Maintainability requirement includes the ability to procure the necessary replacement parts as well as special tools. The University will not consider equipment that requires special adjusting, trouble shooting, and/ or components etc., and tools that cannot be purchased through normal purchasing channels. Special tools provided to the Nova Southeastern University shall include all top level, solid state diagnostic tools and related software documentation which the equipment manufacturer and installer supplies to his adjusters and service personnel. All tools or diagnostic equipment provided as part of the elevator installation shall remain the property of the Nova Southeastern University.

Please refer to the following minimum requirements for elevator systems to be used at Nova Southeastern University:

Controls:

1. Provide an on/off barrel type key switch at call station of each floor at elevators not for general use.
2. Provide corridor push buttons and call stations at each floor for elevators intended for general use at schools or other type of facilities.
3. Provide vandal resistant push button targets at cab interior and call stations in hall.

Elevator pits shall be waterproofed and designed to provide dry pit area and include the following:

1. The floor shall be approximately level.
2. Fully submersible sump pump and sump pit below hoist way pit floor level with flush metal cover. Provide FBC required sump pit size.
3. Size sump pump for a minimum of 3000 gallons/hour per elevator. Coordinate pump size with Design Professional to assure the pump will completely fit within the sump pit and function correctly.

4. Metal ladder, if pit is deeper than 3'-0".
5. One grounded duplex receptacle.
6. No plastic PVC or plastic pipes in pit.
7. An elevator floor pit drain is not acceptable. Elevator pit must have a floor sump pit and pump as required by FBC to a sanitary sewer through a 2" air gap or directly through an oil / water separator to storm sewer or to grade outside the building line each in accordance with discharge permit, regulations and statutes. Coordinate sump pit when applicable with the Architect, Structural Engineer and Electrical Engineer. If an oil/water separator is not feasible, a "smart-pump" or oil minder will be accepted.

Elevator Machine Rooms:

1. The machine room design shall contain only equipment related to the elevator operations as required by ASME A17.1.
2. Preferred location is next to the elevator hoist way on the lowest level served by elevator if using hydraulic. Preferred location for traction elevators is directly overhead or adjacent at top floor.
3. Provide and indicate 2 hour fire rating for floors, walls and ceiling construction.
4. Machine room door (exiting to the interior of the building) shall be a minimum "B" label, fire rated 1-1/2" hour with automatic closure, latching door hardware, panic hardware exit device from interior of the room, and key operated hardware from outside of the room only.
5. Provide at least 7'-0" minimum vertical below all solid items (including the lift beam for electric traction elevators) headroom verified as to need by elevator manufacturer. Provide a maximum machine floor to ceiling height of 12'-0".
6. Provide adequate ventilation while maintaining required two hour fire rating at walls and roof.
7. Constant mechanical cooling and heating to maintain a temperature range between 65 and 85 degrees F. Maximum with relative humidity 85% non-condensing. System shall include digital thermostat.
8. Provide Class ABC Fire extinguisher.
9. Provide 1-1/2 hour rated door equipped with a 2-0" x 2-0" inch fusible link louver as required.
10. Pipes, ducts and conduits not required for elevator operations are not allowed in the elevator equipment room.
    a. Coordinate with designated Nova Southeastern University Information Technology Services (ITS)-network expansion services will install wire to the elevator equipment room jack.
    b. Contractor shall install wire from elevator equipment room jack to elevator speakerphone.
    c. Provide sprinkler connected shunt trips for the elevator disconnect.
11. Hoist way serving 3 or more floors shall provide positive venting of smoke and hot gases to the exterior. Locate a minimum of 3 square feet of vent area in the hoist way walls for each elevator cab.
12. Hoist way door entrances frames, headers and sills shall be grout filled to maintain fire ratings.
13. A vandal proof emergency line powered speaker phone shall be installed inside the cab to comply with applicable codes and standards.
    a. Provide text and Grade II Braille labeling for "EMERGENCY PHONE" and "PUSH TO TALK" signage according to ADA and DCA requirements.
14. Elevator alarm button shall be connected to through facility's security system alarm system.
15. Provide a 6" radius elevator alarm bell with weather proof mounting at building exterior with an "Elevator Emergency" sign as required by code. The bell shall be connected to emergency power in the elevator room.

16. Specify the manufacturer's authorized representative to submit a signed letter acknowledging one of the following:
    a. Intent to supply Nova Southeastern University authorized maintenance contractor with special tools, instructions, computer programs, and any other items necessary to service and maintain elevator.
    b. Service or maintenance of the elevator does not require specials tools, computer programs, or any other special items, and in the case special tools are required, these tools shall be provided to the Owner.

14.1.2 Submittals

Submittal shall include product data, Submittals, Shop drawings, samples and closeout submittals as defined in applicable specification sections.

14.2 Code and Standards

1. Florida Building Code (FBC)
2. Bureau of Elevators of the Department of Business regulations according to Chapter 399 of the Florida Statutes.
3. National Electric Code (NEC)
4. Components, accessories, fabricated parts, and structure requirements shall comply with ANSI / ASME A17.1-1990, ASME A17.2 ASME A17.2.2, ASME A17.2.3 and ANSI A117.1-1986.
5. National Fire Protection Code (NFPA) Sections 101, 252, 70 and 72.
6. Underwriter's Laboratory (UL)
7. American with Disabilities Act and Accessibility Guidelines (ADA).
8. Specific product manufacturer requirements
9. City of Fort Lauderdale Ordinances, Zoning and Architectural Requirements

14.3 Design Criteria

Refer to specific requirements under each section included herein.

14.4 Specific Conveying Systems Requirements (Organized by CSI Master Format® 2013 Numbers & Titles)

14 10 00	Dumbwaiter
14 21 00	Electric Traction Elevators
14 21 13	Electric Traction Freight Elevators
14 24 00	Hydraulic Elevators
14 24 13	Hydraulic Freight Elevators
14 41 19	Stairway Chairlifts
14 42 00	Wheelchair Lifts

14 10 00 Dumbwaiter

These sections provide general guidelines and recommendations for the specific applications.

1. Warranty

Provide and specify a five (5) year warranty from the date of substantial completion of the project in which the manufacturer agrees to repair or replace components of dumbwaiters that fail in materials or workmanship within specified warranty period. Provide a 12 month's full maintenance by skilled employees or dumbwaiter installer. Include quarterly preventative maintenance, repair or replacement of worn or defective components, lubrication, cleaning and adjusting as required for proper dumbwaiter operations. All parts and supplies shall be manufacturer's authorized replacement parts and supplies.

2. Green Sustainable (LEEDS) Submittals
   LEED Submittals (When Required):
   a. "Product Data for Credit EQ 4.4: For composite wood products, documentation indicating that product contains no urea formaldehyde.
   b. Laboratory Test Reports for Credit EQ 4: For composite wood products, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

3. Dumbwaiter Description(s)
   a. Provide equipment that complies with ASME A17.1.
   b. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   c. Fire rated Door and frame assemblies are to comply with NFPA 80 that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction, for fire protection rating as indicated, based on testing according to NFPA 252 or UL 10B.

4. Power Dumbwaiters
   a. Provide manufacturer's standard pre-engineered, electric or hydraulic dumbwaiter system as per manufacturer's recommendation for the applicable application and use after manufacturer evaluation.
   b. Car Platform Size, Height and Rated Load: Nova Southeastern University has expressed a minimum car platform size of 36" wide by 36" deep x 36" car inside height clear inside dimensions as a minimum for design standards with a rated load 100 lbs.
   c. Self Supporting Structure: Powered dumbwaiters shall be manufactured to a standard that contains a self supporting structure that is made from steel with self supporting hoist way framing that supports vertical loads of unit only at base with lateral supports only at landing levels.
   d. Rated Speed: Rated speed shall be no less than 25 fpm.
   e. Electric Power Supply: Powered dumbwaiter shall use 120 V, 60 Hz, 1 phase, 240 V 60 HZ, 1 phase or 208 V, 60 Hz, 3 phases depending on power availability.
   f. Electric Driving Machine: this component selection should be provided by the indicated manufacture depending on the use and application of the power dumbwaiter intended use.
   g. Car recommended manufacturer standard of construction for the following component is recommended:
      1) Enclosure: Sound deadened steel panels with welded joints using plywood with a plastic laminate finish.
      2) Shelves: two (2) removable shelves matching finish of the walls.
      3) Light Fixture: provide manufacturer's light fixture, located in ceiling near front of car.
   h. Car Entrance: Manually operated vertically biparting doors and the following supplemental features are desired.

1) Automatic Hoist Way-Door Operations: Equip car entrance with connecting linkages to operate hoist way doors at each landing when car is present.
2) Car-Door Vision Panel: Glazed port through car door aligning with vision panel in hoist way door.
3) Material and Finish: Match car-enclosure walls.

i. Plastic Laminate Finish: provide manufacturer's standard finish.

5. Other Components
   a. Access Door and Frame: provide manufacturer's standard.
      1) Fire Rating: provide a 1 hour with a 30 minute temperature rise of 450 deg. F.
   b. Control System for Power Dumbwaiters: provide a manufacturer's standard fully automatic, call and send microprocessor control system that responds to momentary push-button signals at each landing and as follows:
      1) Cars shall not respond to station calls for service while in transit, for a predetermined time after arrival at a landing, and when doors are open.
      2) Noninterference Timer: Adjustable, limited period of time receiving station to gain access to car before it responds to net station call for service.
      3) Parking: When delivery has been completed and doors are closed and no calls for service are registered, return car automatically for parking at the lowest landing unless specified otherwise by Nova Southeastern University for any specific building program.
   c. Signal Equipment for Power Dumbwaiters: Manufacturer's standard signal equipment at each landing push-button station; including call button, send button for each landing served, and illuminated "car in use" light that flashes when car arrives at landing until door is opened in a recessed station.
   d. If multiple dumbwaiters are to be used then a Master Control Station for Dumbwaiters shall be used as a control station for each dumbwaiter or group of dumbwaiters, located where indicated on the contract documents. Provide keyed switches and pilot lights for shutdown / startup and emergency stop buttons.

14 21 00 Electric Traction Elevators
14 21 13 Electric Traction Freight Elevator

Design Standards

1. Electric Traction Passenger & Freight Service Elevators

This section provides general guidelines and recommendations for the specific use and applications: for electric traction elevators.

The primary use of the elevator is for students, staff and visitors that are handicapped and not able to use a stairway. The secondary use is for the transport of items that are to bulky or oversized to be moved from floor to stairway. Elevator is not intended for high use and not to be used as a normal means of vertical transportation unless otherwise approved by Nova Southeastern University.

Electric traction elevators should be considered by the Design Professional when building heights exceed 60 feet of travel distance in height and when a cab speeds of 350 feet per minute or above are required in the building design.

Motor control shall have at least a five year track record of proven performance service.

Consider the use of an electric traction elevator when budget and energy efficiency are a required component in the building design process of Sustainable Designs (LEEDS) are a desired component for the indicated building.

Provide a design where the location of all elevators should be accessible from all locations of the facility.

Provide a minimum of one 2,500 pound capacity electric traction elevator. Include a 10'-0" clear high car enclosure and 4'-0" wide x 8'-0" high two-speed opening side door and wall padding option for freight use. If the elevator is to be needed for continued university operations, Provide an additional back-up 2,500 pound capacity electric traction elevator with a 10'-0" clear high car enclosure and 3'-6" wide x 8'-0" high opening center door and wall padding for freight use.

2. Quality Assurance
   a. Installer Qualifications: Elevator manufacturer or an authorized representative who is trained and approved by manufacturer.
   b. Manufacturer Qualifications: ten (10) years of experience in the manufacturing and installation of electric traction elevators.
   c. Preinstallation Conference: Elevator manufacturer or the elevator installer shall attend the pre-construction conference and clarify components, conditions, schedules, project coordination, testing and certification with the General Contractor.

3. Life Expectancy
   a. It is anticipated that new installation or renovated installation will be capable of providing at least 20 years of dependable service before renovation is again considered. The above assumes that a quality, full maintenance program remain in effect throughout the life of the equipment.

4. Submittals
   a. Delegated-Design Submittal: In addition to the specification section submittal requirements. The additional submittal requirements are to be included for installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
   b. The elevator manufacturer shall provide analysis design criteria and projected populations to conduct a vertical transportation equipment analysis.
   c. Product Data and Samples: include complete product data for all elevator components provided by the elevator manufacturer..
   d. Shop Drawings: include floor plan, elevations, sections and large scale details indicating service at each landing, hoist way, layout of equipment, layout of equipment and signals, cars, guide rails, hoist beam, requirements, access door, hoist way doors and frames, electrical characteristic and connection requirements complying with current State of Florida standards at the time of submittal.
   e. Warranty Requirements: One (1) year from the date of substantial completion.
   f. Maintenance Service: One (1) year from the date of Substantial completion, performed during 24 hour emergency call back service for one (1) year commencing on the date of substantial completion. Systematically examine, adjust, clean and lubricate all equipment. Maintain elevator machine room, hoist way and pit in clean condition.

5. New Installation Requirements
   a. Attend meetings to consult with the Design Professional and/or University, including design team members to discuss the project program and establish design requirements. Unique requirements of the building or anticipated occupancy and their influence on the vertical transportation systems are identified at this time.
   b. Establish the analysis design criteria.
   c. Utilize the selected design criteria and projected populations to conduct a vertical transportation equipment analysis. Select and recommend the most viable alternatives.
   d. Submit a written report based upon the analysis and preliminary planning indicated on the schematic architectural drawings. Report shall include:
      1) A definition of the selected design criteria and terms.
      2) Establish criteria to obtain proper levels of vertical transportation service.
      3) Results of computer and/or manual study and analysis calculations.
      4) Recommended solutions
      5) Deviations from Nova Southeastern University Design and Specifications Standards covering vertical transportation equipment.

6. Modernization Requirements
   a. Conduct a detailed survey of the present elevator equipment to determine its condition and potential for reuse in the modernization program.
   b. Perform a computerized elevator group data logger survey on the elevator groups of three cars or more to determine the "before" modernization average system response times.
   c. Investigate the building requirements for elevator service and analyze the needs of the present and projected tenants.
   e. Provide the Nova Southeastern University with a written report documenting the survey and analysis results. The report shall contain:
      1) Recommendations on the types of equipment needed for modernization.
      2) A summary of the present equipment that can be retained.
      3) Modernization options.
      4) Identify current Code requirements, non-code complying building conditions and disabled accessibility requirements.
      5) Identify related work required by other trades.
      6) Provide a cost estimate for the recommended elevator modernization. program. Provide a schedule for the modernization activities.

7. Freight / Service Elevators
   a. Most structures built on the Nova Southeastern University campus will not require a dedicated freight / service elevator. In any event, service would require an analysis and presented for the review by Nova Southeastern University.
   b. The following criteria will apply to the use of a freight / service elevator:
      1) Any office or facility building with a total gross floor area approaching 250,000 sq. ft. should be designed to include one dedicated freight / service elevator.
      2) An additional freight / service elevator should be recommended for each additional 350,000 sq. ft. gross floor area.
      3) Classrooms buildings, especially those containing labs, should be considered on an individual basis.
      4) Freight / service elevators should be hospital shaped with a minimum 5,000 lbs. They should be applied with a minimum 10'-0" clear high car enclosure and 4'-0" wide x 8'-0" high, two speed side opening doors.

c. In situations which demand the application of a swing / passenger freight / service elevator:
   1) It is imperative that swing car be in group operation during peak traffic periods. This shall be accomplished via automatic time clock.
   2) Anticipate that the interior finishes of the designated swing car will be damaged by freight / service handlers and not present a good appearance to passengers. Durable stainless steel finishes shall be employed along with freight pads or covers.
   3) The best application for a swing car is to have reverse opening in service lobbies at all floors or at least the first floor lobby. This keeps freight out of the main lobbies restricts passenger usage of the elevator and eliminates false corridor call registration which will occur if the normal front door passenger doors are also used for freight / service.
   4) Swing service cars should be considered in dormitories of five (5) of more stories.
   5) At campus settings, true freight elevators are usually considered to support food service functions or transport palletized materials. Due to costs and space considerations, analysis reports shall provide through justification for this type of installation.

7. Approved Manufacturers
   a. Geared and gearless elevators:
      1) ThyssenKrupp, Inc.
      2) Otis, Inc.
      3) Schindler, Inc.
      4) KONE, Inc.

8. Microprocessor Group, Car and Motion Control Systems
   a. Group Automatic Operation with Demand –Based Dispatching: provide reprogrammable group automatic system that assigns cars to hall calls based on dispatching program designed to minimize passenger waiting time. System automatically adjusts to demand changes for different traffic conditions including heavy incoming. Heavy two way, heavy outgoing, and light hours a s variations of normal two way traffic.
      1) ThyssenKrupp, Inc. TAC50
      2) Otis, Inc. Elevonic
      3) Schindler, Inc. Miconic TX
      4) KONE, Inc. KCM 831
      5) MCE and CEC Controllers

9. Power Requirements
   a. Typically a minimum of 480V, 3-Phase, 60 Hertz. Power requirements should be carefully confirmed on all modernization projects.

10. Materials
   a. Steel:
      1) Sheet Steel (Furniture Steel for exposed work): Stretcher-leveled. Cold rolled, commercial-quality carbon steel, complying with ASTM A366, matte finish.
      2) Sheet Steel (for unexposed work) hot rolled, commercial-quality carbon steel, pickled and oiled, complying with ASTM A568 and A569.

3) Structural Steel Shapes and Plates: ASTM A7, ASTM and A36.
4). Stainless Steel: Type 302 or 304 complying with ASTM A167, with standard tempers and hardness required for fabrication, strength and durability.
5) Satin Stainless Steel, No. 4: bright directional polish (satin finish). Graining directions as shown or, if not shown, in longest dimension
6) Polished Stainless Steel, No. 8: reflective polish (mirror finish).
7) Textured Stainless Steel: 5WL pattern with .050 inches means pattern depth with bright directional polish (satin finish).
8) Random Stainless Steel: Non-directional, random swirl pattern.

b. Bronze:

Stretcher-leveled, re-squared sheets composed of 60% copper and 40% zinc similar to Muntz metal Alloy Group 2, with standard temper and hardness required for fabrication, strength and durability. Clean and treat bronze surfaces before mechanical finish. After completion of the final mechanical finish on the fabricated work, use a chemical cleaner to produce finish matching Architect's sample:

1) Polished Bronze: bright-polished bronze, clear coated (US9) finish with clear organic lacquer coating recommended by fabricator.
2) Fine Satin (Brushed) Bronze: fine satin bronze, clear coated (US10) with clear organic lacquer coating recommended by fabricator. Provide graining direction as shown or, if not shown, in longest direction.
3) Acid-Etched Pattern: provide a bright polished (US9) background selectively acid etched, matte-textured, custom pattern as shown. Acid selection and dilution (if required) recommended by fabricator. After final finishing, coat bronze with clear-organic lacquer coating recommended by fabricator.

c. Aluminum:

1) Aluminum extrusions per ASTM B2221: Sheet and plate per ASTM B209.

d. Wood:

1) Plastic Laminate: ASTM E84, Class A and NEMA LD3.1, fire rated grade (GP-50), Type 7, 0.050" .005" thick: color and texture as follows:
2) Exposed Surfaces: Color and texture selected by Architect.
3) Concealed Surfaces: Manufacturer's standard color and finish.
4) Particle board shall not contain urea formaldehyde. Fire-retardant Treated Particle Board Panels: Minimum ¾" thick backup for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame spread rating of 100 or less, registered with local authorities for the application for elevator finish materials.
5) Natural Finish Wood Veneer: Standard thickness, 1/40" thoroughly dried conforming to ASME / HPMA HP-1983, Premium Grade, place veneer, tapeless spliced with grain running in direction shown, belt and polished sanded, book matched. Species and finish designated and approved by Design Professional.

10) Paint: Clean exposed metal of oil, grease, scale and other foreign matter and factory paint one shop coat of Manufacturer's standard rust-resistant primer. After erection, provide one finish coat of the industrial enamel paint. Galvanized metal need not be painted.

a.. Prime Finish: Clean all surfaces receiving a baked enamel finish of oil, grease and scale. Apply one coat of rust-resistant mineral paint followed by a filler coat over uneven surfaces. Sand smooth and apply final coat of mineral paint.
b. Baked Enamel: prime finish as above. Apply and bake 3 additional coats of enamel in the selected solid color. Powder coat is an acceptable alternative.
c. Marble: Refer to appropriate Specification Section.
d. Carpet: Refer to appropriate Specification Section.

e. Glass: laminated safety glass, minimum 9/16" thick, conforming to ANSI Z97.1.

11. Car Performance
    a. Speed; Traction Elevator 3% of contract speed under any loading condition.
    b. Capacity: Safely lower, stop and hold up to 125% of the rated load.
    c. Stopping Accuracy: Traction Elevators: ¼" under any loading condition.
    d. Door Opening Time*: Seconds from start of opening to fully open: 4'-0" wide, side opening doors: Traction 2.5 seconds.
    *Values based on a 7'-0" to 7'-6" high doors. For 7'-6" to 8'-6" high doors, add the following factor to door open and door close time: .5 seconds for width up to 42" and 1 second for widths over 42".
    e. Door closing Time: Seconds from start of closing to fully close: Door closing time shall be adjusted within current Code limits. Shop drawings provided by installer shall indicate pertinent weight data and door close time calculations.
    f. Start-to-stop Motion Time* Seconds from start of hoist machine motion until machine motion comes to a complete stop with car level and stopped at next successive floor under any loading conditioning or travel direction (12'-0" typical floor height; adjust .2 seconds per foot of travel on traction equipment:
        1) Traction at 200 f.p.m.: 6.5 seconds
        2) Traction at 350 f.p.m.: 5.6 seconds.
        3) Traction at 450 f.p.m.: 5.2 seconds
    Values are based upon a 3'6" wide, center opening doors. If necessary adjust per "d" above.
    g. Floor-to-Floor performance Time*: Seconds from start of doors closing until doors are ¾" (2 open for side opening doors) and car level and stopped at next successive floor under any loading condition or travel on traction equipment.
        1) Traction at 200 f.p.m.: 10.0 seconds
        2) Traction at 300 f.p.m.: 9.1 seconds
        3) Traction at 450 f.p.m.: 8.7 seconds.
    h. Ride Quality (Geared Traction):
        1) Horizontal acceleration within car during all riding and door operating conditions; not more than 15 mg peak to peak in the 1-10 Hz. Range.
        2) Acceleration and Deceleration; Smooth constant and not more than 3 feet/second/second with an initial ramp between 0.5. and .75 second.
        3) Sustained Jerk: Not more than 6 feet/second/second squared.
    i. Airborne Noise: Measured noise level of elevator equipment and its operation shall not exceed 50 dBa in elevator lobbies and 60 dBa inside elevator car under any condition including door operation and car ventilation exhaust blower at its highest speed.

14 24 00 Hydraulic Elevators
14 24 13 Hydraulic Freight Elevators

Design Standards

This section provides general guidelines and recommendations for the specific applications: for hydraulic elevators.

The primary use of the elevator is for students, staff and visitors that are handicapped and not able to use a stairway. The secondary use is for the transport of items that are too bulky or oversized to be moved from

floor to stairway. Elevator is not intended for high use and not to be used as a normal means of vertical transportation.

Hydraulic elevators should be considered when building heights do not exceed 60 feet of travel distance in height (considered low rise) and when a cab speeds of 200 feet per minute or below are required in the building design.

Consider the use of a hydraulic elevator when budget and energy efficiency are a required component in the building design process of Sustainable Designs (LEEDS) are a desired component for the indicated building.

Provide a design where the location of all elevators should be accessible from all locations of the facility.

Provide a minimum of one 2,500 pound capacity hydraulic elevator. Include a 10'-0" clear high car enclosure and 4'-0" wide x 8'-0" high two-speed opening side door and wall padding option for freight use. If the elevator is to be needed for continued university operations, Provide an additional back-up 2,500 pound capacity hydraulic elevator with a 10'-0" clear high car enclosure and 4'-0" wide x 8'-0" high opening center door and wall padding for freight use. The Hydraulic elevators addressed shall be of the following types:

1. Hydraulic Elevator
    a. Direct Plunger Hydraulic Elevator
        1) Direct Plunger Hydraulic elevator may be employed for a travel distance up to 60 feet with the following considerations:
        2) Contract speed shall not exceed 200 feet per minute.
        3) Elevator analysis must demonstrate that a hydraulic application will meet the Nova Southeastern University Design and Specification Standard Criteria for proper elevator service.
        4) Calculations to determine anticipated up-starts per hour per hour shall accompany the elevator analysis reports. U-starts per hour shall not exceed 120.
        5) Machine rooms, where possible. Shall be located at the bottom terminal floor, adjacent to the hoist way.

2. Holeless Hydraulic Elevator Equipment:
    a. Cantilevered units will not be considered. Dual jacks will be provided on all installation.
    b. Telescoping jacks will not be considered.
    c. Travel distances shall not exceed 30 feet.

3. Quality Assurance
    a. Installer Qualifications: Elevator manufacturer or an authorized representative who is trained and approved by manufacturer.
    b. Manufacturer Qualifications: ten (10) years of experience in the manufacturing and installation of hydraulic elevators.
    c. Preinstallation Conference: Elevator manufacturer or the elevator installer shall attend the pre-construction conference and clarify components, conditions, schedules, project coordination, testing and certification with the General Contractor.

4. Life Expectancy
    a. It is anticipated that new installation or renovated installation will be capable of providing at least 20 years of dependable service before renovation is again considered. The above

assumes that a quality, full maintenance program remain in effect throughout the life of the equipment.

5. Submittals
   a. Delegated-Design Submittal: In addition to the specification section submittal requirements. The additional submittal requirements are to be included for installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
   b. The elevator manufacturer shall provide analysis design criteria and projected populations to conduct a vertical transportation equipment analysis.
   c. Product Data and Samples: include product data for all elevator components.
   d. Shop Drawings: include floor plan, elevations, sections and large scale details indicating service at each landing, hoist way, layout of equipment, layout of equipment and signals, cars, guide rails, hoist beam, requirements, access door, hoist way doors and frames, electrical characteristic and connection requirements complying with current State of Florida standards at the time of submittal.
   e. Warranty Requirements: One (1) year from the date of substantial completion.
   f. Maintenance Service: One (1) year from the date of Substantial completion, performed during 24 hour emergency call back service for one (1) year commencing on the date of substantial completion. Systematically examine, adjust, clean and lubricate all equipment. Maintain elevator machine room, hoist way and pit in clean condition.
6. New Installation Requirements
   a. Attend meetings to consult with the Design Professional and/or Nova Southeastern University, and design team members to discuss the project program and establish design requirements. Unique requirements of the building or anticipated occupancy and their influence on the vertical transportation systems are identified at this time.
   b. Establish the analysis design criteria.
   c. Utilize the selected design criteria and projected populations to conduct a vertical transportation equipment analysis. Select and recommend the most viable alternatives.
   d. Submit a written report based upon the analysis and preliminary planning indicated on the schematic architectural drawings. Report shall include:
   e. A definition of the selected design criteria and terms.
   f. Establish criteria to obtain proper levels of vertical transportation service.
   g. Results of computer and/or manual study and analysis calculations.
   h. Recommended solutions.
   i. Deviations from Nova Southeastern University Design and Specifications Standards covering vertical transportation equipment

7. Modernization Requirements
   a. Conduct a detailed survey of the present elevator equipment to determine its condition and potential for reuse in the modernization program.
   b. Perform a computerized elevator group data logger survey on the elevator groups of three cars or more to determine the “before” modernization average system response times.
   c. Investigate the building requirements for elevator service and analyze the needs of the present and projected tenants.
   d. Provide the Nova Southeastern University with a written report documenting the survey and analysis results. The report shall contain:
      1) Recommendations on the types of equipment needed for modernization.
      2) A summary of the present equipment that can be retained.
      3) Modernization options

4) Identify current Code requirements, non-code complying building conditions and disabled accessibility requirements.
5) Identify related work required by other trades.
6) Provide a cost estimate for the recommended elevator modernization program. Provide a schedule for the modernization activities.

8. Freight / Service Elevators
   a. Most structures built on the Nova Southeastern University campus will not require a dedicated freight / service elevator. In any event, service would require an analysis and presented for the review by Nova Southeastern University.
   b. The following criteria will apply to the use of a freight / service elevator:
      1) Any office building with a total gross floor area approaching 250,000 sq. ft. should be designed to include one dedicated freight / service elevator.
      2) An additional freight / service elevator should be recommended for each additional 350,000 sq. ft. gross floor area.
      3) Classrooms buildings, especially those containing labs, should be considered on an individual basis.
      4) Freight / service elevators should be hospital shaped with a minimum 5,000 lbs. They should be applied with a minimum 10'-0" clear high car enclosure and 4'-0" wide x 8'-0" high, two speed, and side opening doors.
   c. In situation which demands the application of a swing / passenger freight / service elevator, it is imperative that swing car be in group operation during peak traffic periods. This shall be accomplished via automatic time clock.
   d. Anticipate that the interior finishes of the designated swing car will be damaged by freight / service handlers and not present a god appearance to passengers. Durable stainless steel finishes shall be employed along with freight pads or covers.
   e. The best application for a swing car is to have reverse opening in service lobbies at all floors or at least the first floor lobby. This keep freight out of the main lobbies restricts passenger usage of the elevator and eliminates false corridor call registration which will occur if the normal front door passenger doors are also used for freight / service.
   f. Swing service cars should be considered in dormitories of five (5) of more stories.
   g. At campus settings, true freight elevators are usually considered to support food service functions or transport palletized materials. Due to costs and space considerations, analysis reports shall provide through justification for this type of installation.

9. Approved Manufacturers
   a. Hydraulic Elevators:
   b. ThyssenKrupp, Inc.
   c. Otis, Inc.
   d. Schindler, Inc.
   e. KONE, Inc.

10. Microprocessor Group, Car and Motion Control Systems
   a. Group Automatic Operation with Demand –Based Dispatching: provide reprogrammable group automatic system that assigns cars to hall calls based on dispatching program designed to minimize passenger waiting time. System automatically adjusts to demand changes for different traffic conditions including heavy incoming. Heavy two way, heavy outgoing, and light hours as variations of normal two way traffic.
      1) ThyssenKrupp, Inc. TAC 20
      2) Otis, Inc. Elevonic

3) Schindler, Inc. Miconic TX
4) KONE, Inc. KCM 831
5) MCE and CEC Controllers

11. Power Requirements
    a. Typically 480V, 3-Phase, 60 Hertz. Power requirements should be carefully confirmed on all modernization projects.

12. Materials
    a. Steel:
        1) Sheet Steel (Furniture Steel for exposed work): Stretcher-leveled. Cold rolled, commercial-quality carbon steel, complying with ASTM A366, matte finish.
        2) Sheet Steel (for unexposed work) hot rolled, commercial-quality carbon steel, pickled and oiled, complying with ASTM A568 and A569.
        3) Structural Steel Shapes and Plates: ASTM A7, ASTM and A36.
        4) Stainless Steel: Type 302 or 304 complying with ASTM A167, with standard tempers and hardness required for fabrication, strength and durability.
        5) Satin Stainless Steel, No. 4: bright directional polish (satin finish). Graining directions as shown or, if not shown, in longest dimension
        6) Polished Stainless Steel, No. 8: reflective polish (mirror finish).
        7) Textured Stainless Steel: 5WL pattern with .050 inches means pattern depth with bright directional polish (satin finish).
        8) Random Stainless Steel: Non-directional, random swirl pattern.
    b. Bronze:
        1) Stretcher-leveled, re-squared sheets composed of 60% copper and 40% zinc similar to Muntz metal Alloy Group 2, with standard temper and hardness required for fabrication, strength and durability. Clean and treat bronze surfaces before mechanical finish. After completion of the final mechanical finish on the fabricated work, use a chemical cleaner to produce finish matching Architect's sample
        2) Polished Bronze: bright-polished bronze, clear coated (US9) finish with clear organic lacquer coating recommended by fabricator.
        3) Fine Satin (Brushed) Bronze: fine satin bronze, clear coated (US10) with clear organic lacquer coating recommended by fabricator. Provide graining direction as shown or, if not shown, in longest direction.
        4) Acid-Etched Pattern: provide a bright polished (US9) background selectively acid etched, matte-textured, custom pattern as shown. Acid selection and dilution (if required) recommended by fabricator. After final finishing, coat bronze with clear-organic lacquer coating recommended by fabricator.
        5) Aluminum: extrusions per ASTM B2221: Sheet and plate per ASTM B209.
    c. Wood:
        1) Plastic Laminate: ASTM E84, Class A and NEMA LD3.1, fire rated grade (GP-50), Type 7, 0.050" .005" thick: color and texture as follows:
        2) Exposed Surfaces: Color and texture selected by Architect.
        3) Concealed Surfaces: Manufacturer's standard color and finish.
        4) No urea formaldehyde fire-retardant Treated Particle Board Panels: Minimum ¾" thick backup for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame spread rating of 100 or less,

registered with local authorities for the application for elevator finish materials.

5) Natural Finish Wood Veneer: Standard thickness, 1/40" thoroughly dried conforming to ASME / HPMA HP-1983, Premium Grade, place veneer, tapeless spliced with grain running in direction shown, belt and polished sanded, book matched. Species and finish designated and approved by Architect.

c. Paint:
   1) Clean exposed metal of oil, grease, scale and other foreign matter and factory paint one shop coat of Manufacturer's standard rust-resistant primer. After erection, provide one finish coat of the industrial enamel paint. Galvanized metal need not be painted.
   2) Prime Finish: Clean all surfaces receiving baked enamel finish of oil, grease and scale. Apply one coat of rust-resistant mineral paint followed by a filler coat over uneven surfaces. Sand smooth and apply final coat of mineral paint.
   3) Baked Enamel: prime finish as above. Apply and bake 3 additional coats of enamel in the selected solid color. Powder coat finish is also acceptable.

d. Marble: Refer to appropriate Specification Section.

e. Carpet: Refer to appropriate Specification Section.

f. Glass: laminated safety glass, minimum 9/16" thick, conforming to ANS! Z97.1.

13. Car Performance

1. Hydraulic Elevator: 10% of contract speed under any loading condition.
2. Capacity: safely lower, stop and hold up to 125% of rated load.
3. Door Opening Time*: Seconds from start to fully open:
   a. 3'-6" wide single-speed, center opening door: Hydraulic: 2.1 seconds
   b. 4-0" wide, single speed center opening doors: Hydraulic 2.2 seconds.
   c. 3-6" wide side opening doors: Hydraulic 2.3 seconds.
   d. 4'-0" wide, side opening doors: Hydraulic 3.5 seconds.
   e. *Values based on a 7'-0" to 7'-6" high doors. For 7'-6" to 8'-6" high doors, add the following factor to door open and door close time: .5 seconds for width up to 42" and 1 second for widths over 42".
   f. Door closing Time: Seconds from start of closing to fully close: Door closing time shall be adjusted within Code limits. Shop drawings provided by installer shall indicate pertinent weight data and door close time calculations.
4. Start-to-stop Motion Time* Seconds from start of hoist machine motion until machine motion comes to a complete stop with car level and stopped at next successive floor under any loading conditioning or travel direction (12'-0" typical floor height; adjust .2 seconds per foot of travel on traction equipment:
   1) Hydraulic at 100 f.p.m.: 7.0 seconds
   2) Hydraulic at 125 f.p.m.: 6.1 seconds.
   3) Hydraulic at 150 f.p.m.: 5.2 seconds
   a. Values are based upon a 3'6" wide, center opening doors. If necessary adjust per "d" above.
5. Floor-to-Floor performance Time*: Seconds from start of doors closing until doors are ¾" (2 open for side opening doors) and car level and stopped at next successive floor under any loading condition or travel on traction equipment.
   1) Hydraulic at 100 f.p.m.: 14.0 seconds

2) Hydraulic at 125 f.p.m.: 13.0 seconds
3) Hydraulic at 150 f.p.m.: 12.5 seconds

14 41 19 Stairway Chairlifts

1. Vertical platform lifts or inclined wheelchair lifts are not allowed at new construction.

2. Vertical platform lifts or inclined wheelchair lifts shall be provided at stages only if accessibility to a stage cannot be obtained by means of a ramp at renovation or remolding projects due to space restrictions.

3. For future portable vertical lifts, see program requirements for locations with required provisions at music classrooms with risers.

4. Lifts shall not be installed in a required means of exit.

5. Floor penetrations are not allowed.

6. Platform floors and ramps shall be slip resistant.

7. Provide platform / wheelchair lift with key or key card unlocking and constant pressure controls for operation.

8. Platform / wheelchair lifts shall be sized according to accessibility requirements.

9. Static load ratings shall comply with ANSI/ASME A17.1.

10. Lift machinery shall be designed and constructed with secure shielding devices for the pulling chain, cable, or other operating machinery. Equipment with exposed chains, rollers, sprockets, cables, and other potential pinch points will not be accepted for use in school facilities.

11. Switch controls shall include call / send, up / down, emergency stop, reset, and power folding when applicable.

12. Platform / wheelchair lifts shall be UL listed and of weatherproof construction.

13. Platform / wheelchair lifts shall be capable of both attendant and user control operation.

14. Platform / wheelchair lifts shall be connected to emergency power and be able to be lowered by manual operation.

15. Platform / wheelchair lifts require model and manufacturer acceptance by Nova Southeastern University.

16. Ranked in order of preference, platform / wheelchair lifts may be one of the following:
    a. Portable Vertical Platform Lift:
        1) A portable vertical platform lift is not-in-contract (NIC)
        2) Lift shall have solid transparent sidewalls and gates at least 42 inches high above car platform.

3) Provide perimeter obstruction sensors at the platform bottom surface to stop the unit.
4) Provide a folding self-contained ramp.
5) Install tamperproof gate locks interlocks to:
   a) Prevent platform movement from a landing unless the gate or door is closed and locked.
   b) Prevent gate or door opening unless the platform is at the appropriate landing.
6) Provide a loading dock plate to bridge the gap between the lift and the stage.
7) Attach permanently affixed wheels.
8) The lift location, shall be adjacent to power requirements, be on a level surface, and not reduce required egress while in use.

b. Vertical Platform Lift:
1) The hoist way shall be guarded by a solid enclosure; fixed or telescoping, extending from the lower landing to a minimum 42 inches above the upper landing when the platform is in the raised position.
2) Gate locks shall be tamperproof interlocks to:
   a) Prevent platform movement from landing unless the gate or door is closed and locked.
   b) Prevent gate or door opening unless the platform is at the appropriate landing.
3) Platform guard enclosure shall be solid and be at least 42 inches high above car platform.
4) Lifts shall have obstruction sensors at the platform bottom surface to stop the unit.
5) Provide a lift speed of 9.6 to 12 feet per minute.

14 42 00 Wheelchair Lifts

1. Stair Mounted Inclined Platform Wheelchair Lift:
   a. Wheelchair lift installations are not allowed at required egress stairs.
      1) Lifts are only allowed in a stair not required for exit calculations.
      2) A lift may be used in non-protected stair.
   b. The lift platform and guardrails shall be capable power folding and unfolding when not in use or when traveling to a call location.
   c. Lifts shall have directional obstruction sensors at leading and bottom surfaces of platform to stop the unit.
   d. A sign shall be posted on the lift saying: “NEVER LEAVE LIFT UNATTENDED ON THE STAIRS – EMERGENCY POWER AVAILABLE”
   e. Provide a lift speed of 15 to 20 feet per minute.

2. Fire-Rated, Runway-Enclosure Door Assemblies: Assemblies shall complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252.

   1. Temperature-Rise Limit: Provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

END OF DIVISION 14.